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ABSTRACT

Early Head Start began with 68 programs in 1995 and today, almost 650 programs serve some 55,000 low-income families with infants and toddlers. This two-generation program provides high-quality child and family development services, a focus on staff development, and a commitment to community partnerships. A rigorous national evaluation, including about 3,000 children and families in 17 sites, began in 1995. This technical report presents analyses of the impact that the research programs have had on children's development, parenting, and family development through 2 years of age, including details on the study's methodology and analytic approaches. Findings indicated that after a year or more of program services, when compared with a randomly assigned control group, 2-year-old Early Head Start children performed significantly better on a range of measures of cognitive, language, and social-emotional development. Their parents scored significantly higher than control group parents on many measures of home environment, parenting behavior, and knowledge of infant-toddler development. Early Head Start families were more likely to attend school or job training and experience reductions in parenting stress and family conflict. Although these impacts were generally of modest size, the pattern of positive findings across a range of key domains important for children's well-being and future development is promising, because the pattern is consistent across domains of child and family functioning known to be associated with later positive child outcomes, including social abilities, literacy, and school readiness. The report also considers variations in program impacts by race/ethnicity, age at enrollment, age of mother at child's birth, birth order, gender, welfare status, parents' primary occupation, parental education attainment, living arrangements, and risk factors. (Contains 73 references.) (KB)

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EARLY HEAD START

RESEARCH

Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families

Volume I: Technical Report

PS 029572

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Administration for Children & Families
Administration on Children, Youth & Families
Commissioner's Office of Research and Evaluation
and the Head Start Bureau

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Early Head Start
Research and Evaluation Project
Local—National Partnerships

Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families

Volume I: Technical Report

June 2001

The Commissioner's Office of Research and Evaluation
And the Head Start Bureau
Administration on Children, Youth and Families
Department of Health and Human Services

Early Head Start Evaluation Reports

Leading the Way: *Describes the characteristics and implementation levels of 17 Early Head Start programs in fall 1997, soon after they began serving families.*

Executive Summary (December 2000): *Summarizes Volumes I, II, and III.*

Volume I (December 1999): *Cross-Site Perspectives—Describes the characteristics of Early Head Start research programs in fall 1997, across 17 sites.*

Volume II (December 1999): *Program Profiles—Presents the stories of each of the Early Head Start research programs.*

Volume III (December 2000): *Program Implementation—Describes and analyzes the extent to which the programs fully implemented, as specified in the Revised Head Start Program Performance Standards, as of fall 1997.*

Pathways to Quality and Full Implementation (summer 2001): *Describes and analyzes the characteristics, levels of implementation, and levels of quality of the 17 Early Head Start programs in fall 1999, three years into serving families. Presents an analysis of the pathways programs followed to achieve full implementation and high quality.*

Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families: *Presents analysis of the impacts that the research programs have had on children's development, parenting, and family development through 2 years of age.*

Summary Report (January 2001): *Synopsis of the major findings.*

Technical Report (June 2001): *Detailed findings and report on methodology and analytic approaches.*

Special Policy Report on Child Care in Early Head Start (fall 2001): *Describes the nature, types, and quality of child care arrangements in which Early Head Start and control group children enrolled, and presents implication for public policy.*

Special Policy Report on Health and Disabilities in Early Head Start (winter 2002): *Describes health services received by Early Head Start and control group families, and analyzes services for infants and toddlers with disabilities.*

Final Report on the Early Head Start Evaluation (June 2002): *Presents analysis of the impacts that the research programs have had on children's development, parenting, and family development through the children's third birthday (including two to three years of program participation).*

Reports Are Available at:

http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html

http://www.mathematica-mpr.com/3rdLevel/ehstoc.htm

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This research would not have been possible without the dedication, cooperation, enthusiasm, and patience of 17 Early Head Start program directors and their staffs. From our very first meeting (in January 1996, even before programs were selected into the research sample), and through many interactions during site visits and Early Head Start Research Consortium meetings, program staff have fully participated in this research in many ways. The contributions of several program directors are incorporated in this report. Everyone on the local and national research teams is most grateful to the Early Head Start programs for their role in making the study possible. In addition, about 3,000 Early Head Start and control group families put up with our phone calls, visits in their homes, lengthy interviews, video cameras, and child assessment materials. The tangible incentives we were able to offer were small, but we hope the families' participation left them with a sense of contributing to the growing knowledge base of Early Head Start research.

Of particular importance to everyone who stands to benefit from the information presented here is the sponsoring agency, the Administration on Children, Youth and Families (ACYF) in the Administration for Children and Families (ACF). Staff members in ACYF's Commissioner's Office of Research and Evaluation (CORE) have shown unusual devotion to the Early Head Start Research and Evaluation Project. We especially thank Louisa Tarullo, who served as project officer from 1995 until 2000, when Rachel Chazan Cohen assumed that role. Rachel has been highly committed and effective in contributing to and reviewing all aspects of the national evaluation efforts. As chief of CORE, Michael Lopez has always been available to review, discuss, and debate the numerous evaluation issues arising along the way. Within the Head Start Bureau, Esther Kresh served as project officer for all 15 local research grants and contributed her advice and counsel to the national evaluation in many ways. Head Start Bureau and other ACYF program staff participated closely in research activities. We especially thank National Early Head Start Coordinator Judith Jerald and her colleagues Frankie Gibson, Jim Harrell, Mimi Kanda, Doug Klafehn, Ann Linehan, Edgard Perez, Tom Schultz, Mary Shiffer, Willa Siegel, Craig Turner, and Sarah Younglove. Until her untimely death in October 2000, associate commissioner Helen Taylor provided inspiration for both the Early Head Start programs and research. Olivia Golden, first as Commissioner of ACYF and later as the Assistant Secretary for Children and Families, was key to the design of the program and research and contributed her wisdom in many ways throughout the project. In ACF and the Office of the Assistant Secretary for Planning and Evaluation, Howard Rolston, Linda Mellgren, and Martha Moorehouse contributed in important ways, as did Natasha Cabrera and Jeffrey Evans at the National Institute of Child Health and Human Development. All of these individuals have been extremely responsive in providing suggestions, guidance, and feedback at every level from design to reporting.

This project is unique in having the presence of a special individual who has shown uncommon devotion to carrying out the vision of the advisory committees that set in motion the plans for the Early Head Start program and its evaluation. While serving as a Society for Research in Child Development Executive Branch Policy Fellow at ACYF from 1994 to 1996, Helen Raikes led the ACYF team that created the Early Head Start evaluation design. Beginning at the outset of the evaluation contract in September 1995, she has served unstintingly as project monitor for the national study. Helen has inspired and guided the national evaluation team;

vigorously participated in the many consortium, steering committee, and workgroup activities; and interacted closely with the national team through every phase as we worked through decisions on sites, measures, data collection strategies, analytic approaches, and dissemination activities. We are extremely proud to acknowledge her imprint on every element of the research, the analysis, and the report.

An essential element in the Early Head Start Research Consortium, the 15 local research teams, has been instrumental in facilitating the completion of the research reflected in this report. In addition to conducting their own investigations, local researchers were partners in the research process. They assisted us during the implementation study, actively participated in some dozen consortium meetings, and engaged with us in lively debates about measures, data collection procedures, analysis methods, and the interpretation of findings. In addition to conducting complex data collection activities, they contributed invaluable information on the local context of the programs they work with, and provided feedback on our draft reports. Many wrote up some of their local research for inclusion in this volume. The full membership of the consortium is more completely acknowledged in Appendix F.

The authors of this report are grateful to our many colleagues at MPR and Columbia, whose work has been essential in enabling us to achieve this milestone. We list all contributing colleagues in Appendix F, but here acknowledge many of the key individuals. John Burghardt, Stuart Kerachsky, Mark Dynarski, Lorenzo Moreno, and Chuck Metcalf have lent their expertise in design and data analytic approaches at various stages of the research. Undergirding the research has been an outstanding team responsible for overseeing the field data collection. All of us owe much to Susan Sprachman, who, from early 1996 through late 1998, led the effort to create the field versions of many complex measures, design and carry out training of dozens of data collection staff from the 17 sites, and develop the system for tracking the 3,000 families. In fall 1998, Welmoet van Kammen assumed the leadership role for data collection oversight and worked closely with the local research teams and their data collection staffs to ensure the highest-quality data possible. Welmoet and Susan were supported by their dedicated colleagues, Cheryl DeSaw, Sharon DeLeon, Chake Dereyen, David Eden, Linda Gentzik, Bea Jones, Barbara Kolln, Linda Mendenko, Rosiland Page, Margo Salem, Barbara Schiff, Ben Shen, and Andrea Sleeper. Our systems analyst, Anne Bloomenthal, worked with great care to build the many cross-site data files used in these analyses and provided the site-level files for the local research teams and workgroups, enabling them to participate in the data analysis. Many researchers and programmers worked during these years to ensure accurate statistical analysis; we thank R. J. Cao, Dexter Chu, Jennifer Faerber, Veronica Holly, Miriam Loewenberg, Alyssa Nadeau, Charles Nagatoshi, Tim Novak, Linda Rosenberg, Rachel Sullivan, Xiaofan Sun, and Cheri Vogel. Jeanne Bellotti, Julius Clark, and Don Lara have been instrumental in maintaining the data collection subcontracts with the local research teams.

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DEDICATION

We dedicate this report to two special individuals who were devoted to Early Head Start—both the program and the research—and who worked tirelessly for many years to see their dreams realized. Susan McBride, associate professor of human development and family studies at Iowa State University, served as principal investigator for the ISU research team from the project's beginning in 1996 until her death in 2000. She was an active member of the consortium, serving at various times on the consortium steering committee, the data collection committee, the theories of change workgroup, the father studies workgroup, and the longitudinal studies group. Closest to her heart, however, were the disabilities workgroup and studies of the home-visiting process, to which she actively contributed.

Helen Taylor was the Associate Commissioner for Head Start within the Administration on Children, Youth, and Families until her death in October 2000. With clear vision, she nurtured, guided, cajoled, and inspired Head Start and Early Head Start programs to do their best and never to lose sight of their primary mission—supporting children's development. She continually stressed the need for high-quality programs and insisted on holding programs accountable for delivering on their promise. Helen's leadership inspired all of us to carry out an evaluation as rigorous and as meaningful as her own high standards.

Both Susan and Helen are greatly missed, but their spirit and legacy continue to infuse the ongoing work of the programs and the research.

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EXECUTIVE SUMMARY

Early Head Start is a two-generation program that provides child and family development services to low-income pregnant women and families with infants and toddlers. It also blends these services with a focus on staff development and a commitment to community partnerships. Early Head Start began with 68 new programs in 1995 in response to the recommendations of the 1993 Advisory Committee on Head Start Quality and Expansion and the 1994 Advisory Committee on Services for Families with Infants and Toddlers. The program continued to build on its bipartisan mandate embodied in the 1994 Head Start reauthorizing legislation, with impetus added by the 1998 reauthorization. Today, almost 650 programs serve more than 55 000 low-income families with infants and toddlers. A rigorous national evaluation, including about 3,000 children and families across 17 sites, also began in 1995. This report, *Building Their Futures,* describes the interim impact findings emerging from the analysis of child and family outcomes through the first two years of the children's lives.

The national evaluation, conducted by Mathematica Policy Research, Inc., and Columbia University's Center for Children and Families at Teachers College, in collaboration with the Early Head Start Research Consortium, finds that a year or more after program enrollment, when compared with a randomly assigned control group, 2-year-old Early Head Start children performed significantly better on a range of measures of cognitive, language, and social-emotional development. Their parents scored significantly higher than control group parents on many aspects of the home environment, parenting behavior, and knowledge of infant-toddler development. Early Head Start families were more likely to attend school or job training and experienced reductions in parenting stress and family conflict.

Although these impacts are generally modest in size, the pattern of positive findings across a wide range of key domains important for children's well-being and future development is promising. For example:

- At 2 years of age, Early Head Start children scored higher on a standardized assessment of infant cognitive development than the control children and were reported by their parents to have larger vocabularies and to use more grammatically complex sentences. On the assessment of cognitive development, Early Head Start children were less likely to score in the at-risk range of developmental functioning. Thus, Early Head Start programs have decreased by 16 percent the proportion of children in the lowest-functioning group, perhaps reducing their need for special services later on.

- Early Head Start 2-year-olds lived in home environments that were more likely to support and stimulate cognitive development, language, and early literacy, based on researchers' observations using a standard scale. Early Head Start children lived in homes that also showed lower levels of parenting stress and family conflict when compared with the homes of control children. However, according to parent reports, safety practices in the homes of Early Head Start children were no better than those of control families.

- When interacting with their 2-year-olds, Early Head Start mothers were more supportive, more sensitive, less detached, and were more likely to stimulate cognitive and language development during play, based on researchers' observations of semistructured parent-child interactions. Program parents were more likely than control parents to read to their children daily and at bedtime.

- Early Head Start mothers were less likely than control mothers to report spanking their child in the past week and were more likely to describe milder and more-positive discipline strategies in response to hypothetical parent-child conflict situations (such as distracting the child, talking to the child, and suggesting ways to prevent conflicts).

- In the short term, Early Head Start parents were more likely than control parents to participate in education and job training, but they were no more likely to be employed and no less likely to be receiving welfare cash assistance during the evaluation period.

The Early Head Start programs were successful in providing child development and parenting services to nearly all program families. Programs also provided families with a greater intensity of services than the control group families obtained in their communities. Data from the implementation study show that the child development services provided by the Early Head Start programs were usually of good quality and improved over time.

Programs choosing different approaches to providing services, to meet the unique needs of children and families in particular communities, achieved different patterns of success. While all center-based, home-based, and mixed-approach programs produced positive impacts on children, they did so differently, with the center-based programs significantly enhancing cognitive development, the home-based programs improving one dimension of language development, and the mixed-approach programs consistently enhancing children's language and social-emotional development. With some exceptions, Early Head Start impacts on parenting and the home environment were concentrated in the home-based and mixed-approach programs, as were the impacts on parent participation in education or job-training. These differences reflect variations in the services provided under each approach as well as other differences among programs and communities choosing each approach.

Earlier attainment of full implementation of key elements of the revised Head Start Program Performance Standards was important to success in enhancing child and family outcomes. Programs that implemented the standards early had larger impacts on families' use of services, children's development, parenting, and family development than did programs that fully implemented the performance standards later or never implemented them completely. While other differences among programs and communities may be contributing to these associations, it appears that full implementation of the standards contributes to better outcomes for both children and their parents.

The impacts of the Early Head Start research programs were fairly broad-based. The programs had some significant impacts in most of the subgroups of families we examined, although patterns of impacts varied. The programs were generally more effective with families in which the primary caregiver had greater need for the social and other program supports, and families with moderate risks rather than low or high ones. The Early Head Start research programs also showed patterns of significant impacts in several policy-relevant subgroups: welfare families, working families, and families headed by teenage mothers. For these families, Early Head Start programs appear to have provided a foundation of support for parenting and child development while families coped with new work requirements and time limits on TANF cash assistance, balanced the demands of work and family, or attended to their own developmental needs.

These analyses incorporating program implementation data show that, in addition to the overall impacts on children and their families already noted, two important messages emerge from these findings:

- More completely implementing the Head Start program performance standards is an important key to the success Early Head Start programs have in enhancing the lives of the children and families.
- All program approaches for delivering services can be successful, but their benefits manifest themselves in different ways when programs choose their service approach based on families' needs. The mixed-approach programs, which provide both center- and home-based services, generally achieved a stronger pattern of impacts on children and families.

The early impacts reported here are promising, because the pattern of positive findings is consistent across multiple domains of child and family functioning that are known to be associated with later child outcomes, including social abilities, literacy, and school readiness. The final report on program impacts, due to Congress in June 2002, will assess whether these effects are sustained as the children reach their third birthdays and families complete their program participation.

I. BACKGROUND AND CONTEXT FOR THE EVALUATION

In just six years, Early Head Start has grown from 68 initial grantees to almost 650 programs that in 2001 serve more than 55,000 low-income families with infants and toddlers throughout the country. With an increasing share of the Head Start budget, Early Head Start is an ambitious effort in which the Administration on Children, Youth and Families (ACYF) is responding to the "quiet crisis" facing American infants and toddlers, as identified by the Carnegie Corporation of New York in its 1994 *Starting Points* report.[1] This interim Early Head Start evaluation report traces the services that Early Head Start families in 17 programs received during their first 15 months in the program, describes the differences that the programs made in the services families received, and examines their impacts on the children and families through the children's second birthday. (The evaluation's final report, one year hence, will report findings through three years of program participation and the children's third birthday.[2]) This report builds on the Early Head Start implementation study, which is fully described in two reports: *Leading the Way* (Administration on Children, Youth and Families 1999a, 1999b, 2000a, and 2000b) and *Pathways to Quality* (Administration on Children, Youth and Families 2001b).

This chapter begins with a history of the program and a description of the policy, programmatic, and research context for both the program and its evaluation. We summarize the questions the evaluation addresses, the conceptual framework guiding this research, and the general hypotheses that underlie the analyses. We then describe the 17 research programs, their families, and their communities, and follow with a description of the design, sample, and analytic approaches taken in the study.

---

[1] The 1994 and 1998 Head Start reauthorizations directed that the percentage of the annual Head Start budget allocated to the new Early Head Start program was to begin at 3 percent in 1995 and be increased to 9 percent for 2001 and 10 percent for 2002 and 2003.

[2] A complete list of the national Early Head Start evaluation reports appears on page ii.

Subsequent chapters describe:

- The evaluation methodology and analytic approaches
- The services received by Early Head Start mothers, fathers, and children, and the difference the programs have made in the rates and intensity of their participation in a wide range of services during the initial period following program enrollment
- How the programs have influenced children's development, parenting, and family development when the children are 2 years of age
- Variations in impacts among key subgroups of children and families
- Implications of these findings for policy, practice, and research

This report also recognizes the fathers of Early Head Start children and presents what we have learned about their involvement with the programs and with their families. In addition, findings and perspectives from local program and research partners are integrated throughout.

A. EARLY HEAD START, ITS HISTORY, AND ITS DEVELOPMENT AS A NATIONAL PROGRAM

Early Head Start programs are comprehensive, two-generation programs that focus on enhancing children's development while strengthening families. Designed for low-income pregnant women and families with infants and toddlers up to age 3, the programs provide a wide range of services through multiple strategies. Services include home visiting, case management, child development, parenting education, child care, health care and referrals, and family support. These services are configured into three program approaches (home-based, center-based, and a mixed approach), which are described in Section C.

A number of key events and changes, both external to and within the Head Start/Early Head Start infrastructure, have shaped the development of the programs during their first six years.

Figure I.1 depicts the timing of these key events. These and other events are described in the following sections.

1. The Role of Legislation and Advisory Committees

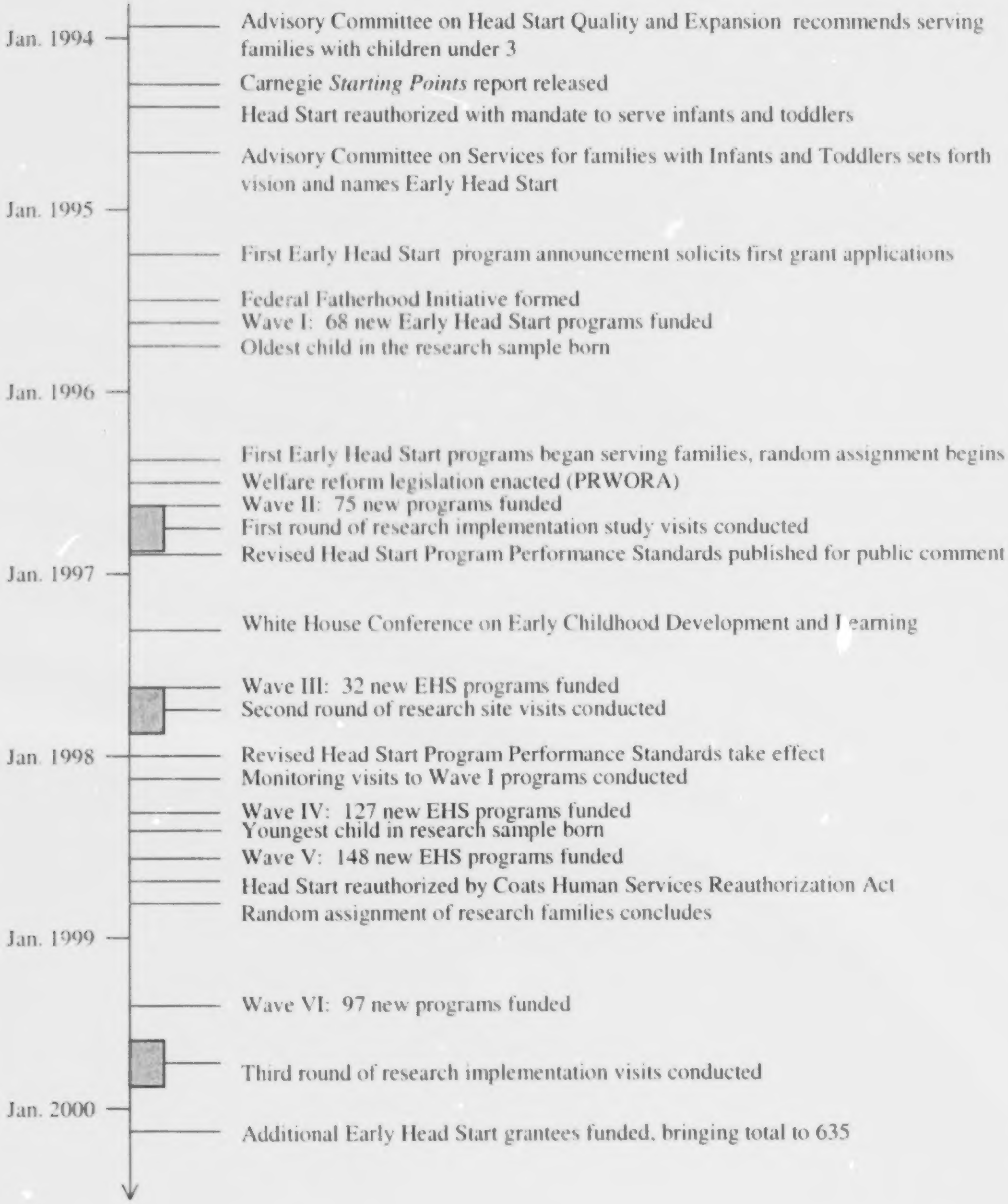
The federal Early Head Start program began with bipartisan support through the 1994 Head Start reauthorization that established the mandate for infant-toddler services within Head Start. A later Congressional mandate (the 1998 Head Start reauthorization) propelled the program toward relatively rapid expansion.

Leading up to these mandates, a comprehensive study of Head Start services by the Advisory Committee on Head Start Quality and Expansion called for developing a "new initiative for expanded Head Start supports to families with children under age three." At the same time, the committee recommended actions to ensure that such services are of the highest quality and that new partnerships be forged to reduce fragmentation of services (U.S. Department of Health and Human Services [DHHS] 1993). In response to the 1994 reauthorizing legislation, the Secretary of DHHS appointed the Advisory Committee on Services for Families with Infants and Toddlers. It envisioned a two-generation program with intensive services beginning before birth and concentrating on enhancing development and supporting the family during the critical first three years of the child's life (U.S. Department of Health and Human Services 1995). The Advisory Committee recommended that programs be designed to produce outcomes in four domains:

1. ***Child development*** (including health, resiliency, and social, cognitive, and language development)
2. ***Family development*** (including parenting and relationships with children, the home environment and family functioning, family health, parent involvement, and economic self-sufficiency)

FIGURE I.1

KEY EVENTS IN THE HISTORY OF EARLY HEAD START



Advisory Committee on Head Start Quality and Expansion recommends serving families with children under 3
Jan. 1994
Carnegie *Starting Points* report released
Head Start reauthorized with mandate to serve infants and toddlers
Advisory Committee on Services for families with Infants and Toddlers sets forth vision and names Early Head Start
Jan. 1995
First Early Head Start program announcement solicits first grant applications
Federal Fatherhood Initiative formed
Wave I: 68 new Early Head Start programs funded
Oldest child in the research sample born
Jan. 1996
First Early Head Start programs began serving families, random assignment begins
Welfare reform legislation enacted (PRWORA)
Wave II: 75 new programs funded
First round of research implementation study visits conducted
Revised Head Start Program Performance Standards published for public comment
Jan. 1997
White House Conference on Early Childhood Development and Learning
Wave III: 32 new EHS programs funded
Second round of research site visits conducted
Jan. 1998
Revised Head Start Program Performance Standards take effect
Monitoring visits to Wave I programs conducted
Wave IV: 127 new EHS programs funded
Youngest child in research sample born
Wave V: 148 new EHS programs funded
Head Start reauthorized by Coats Human Services Reauthorization Act
Random assignment of research families concludes
Jan. 1999
Wave VI: 97 new programs funded
Third round of research implementation visits conducted
Jan. 2000
Additional Early Head Start grantees funded, bringing total to 635

3. ***Staff development*** (including professional development and relationships with parents)

4. ***Community development*** (including enhanced child care quality, community collaboration, and integration of services to support families with young children)

The Advisory Committee also stressed continuous program improvement and recommended that national and local research be conducted to inform the development of the new Early Head Start program. The committee specified that local programs conduct annual self-assessments and improve their services based on analysis of local data. Both the 1994 and 1998 Head Start reauthorizing legislation specified that an evaluation begin early to focus on learning about all the services being delivered to families with infants and toddlers and the impacts of services on children and families.

2. The National Early Head Start Program

At the very outset of Early Head Start, ACYF created an infrastructure for supporting programs. This included the revised Head Start Program Performance Standards, an ongoing training and technical assistance (T&TA) system, and program monitoring. Early Head Start program guidelines also emphasized the importance of continuous program improvement, and built in research from the very beginning.

The Head Start Program Performance Standards, which have guided Head Start practice since the 1970s, were revised and published for comment in November 1996. The revised standards went into effect in January 1998, bringing Early Head Start programs under the Head Start standards umbrella. Between fall 1996 and January 1998, the Head Start Bureau worked with Early Head Start programs to clarify a number of the new elements in the standards. Within ACYF, the Head Start Bureau, under the leadership of the late Helen Taylor, emphasized the centrality of children's development and stressed program quality through adherence to the standards. The bureau worked with both Head Start and Early Head Start programs to meet the standards, and some programs that were not able to improve have closed.

In 1995, ACYF created the Early Head Start National Resource Center (NRC) to provide ongoing support, training, and technical assistance to all waves of Early Head Start programs. Operated under contract by the Zero to Three national organization, the NRC provided a range of services:

- Week-long training in infant care ("intensives") and annual institutes for all Head Start programs serving families with infants and toddlers
- Provision of a cadre of infant-toddler experts for (1) working with ACYF regional offices and Indian and Migrant program branches, and (2) conducting one-on-one consultations
- Coordination with ACYF's regional training centers, the Head Start Quality Improvement Centers (HSQICs) and Disabilities Services Quality Improvement Centers (DSQICs)

The 1998 Head Start reauthorization included funding for a leadership position for Early Head Start programs within the Head Start Bureau, supporting the mandated expansion of Early Head Start and the monitoring that is carried out to ensure program quality. Through comprehensive on-site visits, monitoring teams review programs for standards compliance every three years.

3. The Program's Policy Context

During the initial period of Early Head Start's implementation, significant national, state, and local changes were occurring, potentially affecting the approaches taken by Early Head Start programs, the way families responded, and how programs and communities interacted. The increasing focus on the importance of early development (including brain development) attracted the attention and support of policymakers, program sponsors, and community members for Early

Head Start services. Just at the time that Early Head Start began serving families, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) enacted major reforms to the nation's system for providing income support to low-income families. This caused some programs to adjust their service delivery plans to meet changing family needs. Because some states no longer exempted mothers of infants from work requirements, some parents became more receptive to employment-related services (including child care) and may have been less available to participate in program activities.

In some states, changes associated with PRWORA have made it easier for families to obtain child care subsidies and have spurred states to improve and expand child care. Several states where Early Head Start research programs are located have increased funding for child care, aided centers seeking accreditation, or facilitated quality improvements for infant-toddler care. The expansion of prekindergarten programs may have created opportunities for children's transition to other programs when they leave Early Head Start, while new prekindergarten programs often compete for the same well-trained staff that Early Head Start programs need.

The federal Fatherhood Initiative has heightened attention to the role of fathers in a wide range of federal programs and has increased Early Head Start programs' efforts to draw men into their program activities and into the lives of Early Head Start children. In addition, programs have responded to PRWORA's increased emphasis on establishing paternity and enforcing child support.

A strong economy with low unemployment rates throughout the period of the early development of Early Head Start programs probably helped them meet the many needs of their low-income families. While some of the families were eligible for health care assistance through the Children's Health Insurance Program (CHIP), most were served by Medicaid. With CHIP, some states with Early Head Start programs have moved far in providing health services for all children.

4. The Research Context for the Early Head Start Program and Its Evaluation

Over the past decade, findings from a number of program evaluations have emerged that have a direct bearing on the Early Head Start evaluation. Some findings—particularly those from the Comprehensive Child Development Program (CCDP) and the Packard Foundation's review of home-visiting programs—identified many of the challenges inherent in trying to make a difference for infants and toddlers in low-income families. The CCDP experience highlighted the importance of focusing program services on child development, while the home-visiting literature reveals the importance of understanding—and measuring—the implementation and intensity of services. These lessons influenced both the guidance that ACYF has provided to Early Head Start programs over the past six years and the design of this evaluation.

a. Brief Review of Other Studies

A number of evaluations of two-generation programs serving low-income families with infants and toddlers have been conducted over the last quarter century. Program effects have often appeared weak, but the findings are difficult to interpret because of the great diversity in both program approaches and research methodologies across studies. Programs have varied in (1) the duration and intensity of services, (2) the timing of services, (3) their status as home- or center-based (or both), (4) the duration and intensity of the parenting component, (5) the extent of reliance on case management, and (6) the nature of self-sufficiency (adult education and job training) components. The research has also been variable, with differences in designs, domains assessed, timing of assessments, degree of information on program implementation, and extent of information on services received by control group families.

The Child and Family Resource Program was a comprehensive, two-generation demonstration program for families with infants and toddlers. The program produced significant effects on a number of parent outcomes after three years (employment or job training, coping skills, sense of control) and on parent-child teaching skills, but did not significantly affect children's cognitive or social development (Nauta and Travers 1982).

Randomized studies of three Parent Child Development Centers (PCDCs) focused on mother-child interactions and infant/toddler cognitive development. Dokecki, Hargrave, and Sandler (1983) found impacts on positive maternal behaviors at two sites and significantly higher Stanford Binet scores for PCDC children at two sites.

Between 1972 and 1977, the Carolina Abecedarian Project enrolled 120 "high-risk" families in four cohorts. From these, 111 children were randomly assigned to the program, which included full-time child care beginning in the first three months of life, or to a control group. Families and children continued receiving services until age 5. The program, which also provided social supports for families, was highly successful in improving children's cognitive development relative to the control group, with significant differences at 18, 24, and 36 months of age, and with an effect size of more than 1 standard deviation at 36 months (Campbell and Ramey 1994; and Ramey and Campbell 1991). The largest effects were found for children with the most extreme environmental risks. No effects were found on the families' home environments. The intervention impacts appeared to be smaller when control group children enrolled in community child care (Guralnick 2000). Follow-up studies showed that program effects persisted at every assessment point through 16 to 20 years of age.

Olds's Nurse Home Visitation Program is a model, designed some 20 years ago, in which nurses visit mothers, beginning during pregnancy and continuing until the children are 2 years old, "to improve pregnancy outcomes, promote children's health and development, and strengthen families' economic self-sufficiency" (Olds et al. 1999). Results of two randomized trials show reduced rates of childhood injuries and ingestions (events perhaps associated with child abuse and neglect). For the mothers in one site, they found long-term reductions in child abuse and neglect, reductions in subsequent pregnancies, increased economic self-sufficiency, and avoidance of substance abuse and criminal behavior. At age 15, the children had fewer arrests, convictions, and other negative outcomes. However, "the program produced few effects on children's development or on birth outcomes," and the other benefits were found for the neediest families rather than the broader population (Olds et al. 1999).

Project CARE tested the effectiveness of home-based parent education and social services with and without full-time, center-based child care. At 2 years of age, differences in language and cognitive development significantly favored the group that had received child care combined with family education, and these differences continued to 4 years of age (although somewhat lessened) (Wasik, Ramey, Bryant, and Sparling 1990). Project CARE compared two treatments (child care plus family support, family support only) with a no-services control group. The group with child care plus family support performed significantly better than both the other groups (Wasik et al. 1990).

The Infant Health and Development Program (IHDP) combined home visiting, center-based education, and family services to low-birthweight premature infants and their families during the first three years of life. At age 3, the program group scored significantly higher on the Stanford Binet and lower in behavior problems. The heavier low-birthweight infants benefited more at ages 2 and 3 than did the lower low-birthweight children (Brooks-Gunn, Klebanov, Liaw, and Spiker 1993). Effects were sustained through age 8 for the heavier low-birthweight children (McCarton et al. 1997).

The Comprehensive Child Development Program (CCDP) was implemented in 24 sites beginning in 1989 and 1990. Programs featured intensive social services and parent education, although direct child development services and program-sponsored child care were far less intensive than in the IHDP and Abecedarian programs. When children were 2 years old, the national evaluation (conducted in 21 of the sites) found that CCDPs significantly improved (1) mothers' parenting skills and attitudes (for example, greater sensitivity to cues given by children in parent-child interactions and more appropriate responding to signals of distress), (2) parents' economic self-sufficiency, and (3) children's cognitive development (Bayley Scales of Infant Development) and social behavior (cooperation and following rules). (Language development at age 2 was not measured.) These effects largely disappeared by age 5. At one site, however, significant and moderately large positive impacts were found at age 5 on children's cognitive development, parenting skills, and several self-sufficiency outcomes (St. Pierre, Layzer, Goodson, and Bernstein 1997). Impacts at intervening ages have not been reported.

In a secondary analysis of CCDP's 2- to 5-year impact data, Brooks-Gunn, Burchinal, and Lopez (2000) found that when sites were divided into two equal-size subgroups with more- and less-intensive parenting education (based on the average number of home visits families at each site received), the subgroup of programs with more-intense parenting education showed three important significant impacts relative to the control groups at those sites: (1) higher Bayley scores at age 2, (2) higher Kaufman Assessment Battery for Children (K-ABC) Achievement Scale scores at ages 3 to 5, and (3) higher Peabody Picture Vocabulary Test-R scores at ages 3 to 5. No impacts were found in the subgroup of sites where programs had less-intense parenting education.

Comparisons of the effects of home visiting and center-based programs are difficult to make. In a careful review, however, Benasich, Brooks-Gunn, and Clewell (1992) examined 27 studies and discovered that 90 percent of the center-based programs (compared with 64 percent of the home-based programs) produced immediate impacts on cognitive outcomes.

b. Building a Knowledge Base for Early Head Start

When they recommended Head Start services for infants and toddlers, the Head Start Quality and Expansion Panel and the Advisory Committee on Services for Families with Infants and Toddlers drew upon evidence of effectiveness in the existing research literature (including some of the findings cited here). The Advisory Committee on Services to Families with Infants and Toddlers consolidated knowledge from the research literature and from practice into nine principles to guide Early Head Start programs: (1) high quality; (2) prevention and promotion; (3) positive relationships and continuity; (4) parent involvement; (5) inclusion; (6) culture; (7) comprehensiveness, flexibility, responsiveness, and intensity; (8) transition; and (9) collaboration. These principles, along with the revised Head Start Program Performance Standards, set the stage for quality as they guided programs to implement specific practices (for example, low child-teacher ratios in relation to high quality).

Head Start advisory committees have called for research that learns about the conditions under which programs are successful (and for whom programs can be more effective) and promotes continuous program improvement. The Early Head Start Research and Evaluation project, therefore, represents not only an evaluation of the initial stages of Early Head Start but an important step in expanding the Early Head Start knowledge base in very systematic ways. It attempts to do so by building in a number of features in response to the shortcomings of previous studies and the challenges of the new standards, guidelines, and principles. These features include:

- A comprehensive implementation study to provide data on the services specified in the revised Head Start Program Performance Standards that Early Head Start programs delivered
- Collection of extensive data on the services individual families receive at specified intervals following random assignment, while *also* carefully and thoroughly documenting services received by control group families along the same dimensions and at the same intervals as for the program families (see Chapter III)
- Documenting the overall impacts of Early Head Start on children and families (see Chapters IV, V, and VI) and conducting analyses that take participation rates into account in testing for program impacts
- Conducting subgroup analyses to examine the extent to which different program approaches have different kinds of effects on Early Head Start's children and families (as described in Chapters III, IV, V, and VI)
- Conducting subgroup analyses to learn how the effectiveness of Early Head Start may differ according to the characteristics of the families being served (see Chapter VII)
- Conducting subgroup analyses to examine the relationship between levels of program implementation and the impacts achieved (Chapters III through VI)
- Incorporating local research, as well as other local documentation (including from program staff), to supplement the cross-site national data collection and analysis (highlighted throughout this report)

This research and evaluation work paves the way for a final Early Head Start evaluation report, in spring 2002, on child and family outcomes when children are 36 months old. In addition, a longitudinal follow-up study is currently underway, as the first Early Head Start "graduates" began preschool in fall 2000.

B. RESEARCH QUESTIONS ADDRESSED IN THE EARLY HEAD START IMPACT STUDY

1. Central Questions of the Study

The national evaluation has two overarching goals: (1) understanding the extent to which the Early Head Start intervention can be effective for infants and toddlers and their low-income families, and (2) understanding what kinds of programs and services can be effective for children and families with different characteristics living in varying circumstances and served by programs with varying approaches. The study was designed to address several key questions:

- How do Early Head Start programs affect child, parent, and family outcomes?
- How do different program approaches and community contexts affect these outcomes?
- How do program implementation and services affect outcomes?
- How do the characteristics of children and families affect outcomes?

These broad questions are translated into more specific research questions as we approach the analysis of impacts on services, children, parenting, and families (and are presented within the appropriate chapters).

2. Conceptual Framework

Like its older sibling Head Start, Early Head Start has the ultimate goal of promoting children's social competence, in the fullness of Zigler's original definition—children's "everyday effectiveness in dealing with their present environment and later responsibilities in school and life" (Zigler 1972). Infants and toddlers, however, have unique qualities that are different from those of preschool-age children, including their period of rapid development and important developmental milestones (such as developing trust and language development). Good nutrition and health are particularly important during the first three years of life, as are both emotional and cognitive stimulation. Infants and toddlers develop in the context of relationships, and interventions during this period typically focus on those relationships, especially the one between parent and child.

The five objectives of the Head Start performance measures also apply conceptually to infants and toddlers, even though they were designed for preschool-age children. The objectives describe both processes and outcomes of the program. One can visualize the conceptual framework as a pyramid, with program management and operations at the base, providing the foundation for delivering services, supporting child and family development, and creating the ultimate outcomes that support social competence (Administration on Children, Youth and Families 1998). The evaluation design (described in greater detail in Section D and in Chapter II) follows this overarching framework:

- The evaluation of Early Head Start began by documenting and analyzing program implementation to ascertain whether the research programs were well managed and had the potential for making a difference in the lives of children and families.
- We collected extensive data on program services to determine the extent to which programs (1) provided children and families with the appropriate services, and (2) linked children and families to needed community services and resources.
- We then measured children's growth and development, along with their families' functioning and strengths and, by contrasting them with the same measures in control group children and families, assessed the impacts the research programs are having at this early stage in their development.

3. Overarching Hypotheses

As described in Section C, Early Head Start programs strive to influence children's development, parenting, and family functioning through three main approaches (center-based, home-based, and mixed). Within these approaches, we see that programs may follow multiple pathways for achieving their outcomes. Although service delivery strategies are implemented in diverse ways, they reflect two primary pathways to achieving the ultimate enhanced development of infants and toddlers (these can also be thought of as alternative theories of change by which programs achieve their effects):

1. ***The direct child pathway,*** for which we hypothesize that impacts on children's development will be either more probable or stronger than impacts on parenting, parent-child interactions, and family functioning. Programs emphasizing this pathway work with children and families primarily through child development centers. Caregivers interact directly with children to establish relationships, and conduct activities designed to enhance children's health and their cognitive, social-

emotional, and physical development. These programs also support families through social services, parent education, and parent involvement, but most services are child-focused.

2. ***The indirect child pathway through parenting and parent-child relationships,*** for which we hypothesize that impacts on parenting, parent-child relationships, and family functioning will be more common or stronger than the impacts on children's development, at least during the first two years of life. We hypothesize that child development impacts will manifest themselves somewhat later than through the direct child pathway. Programs emphasizing this pathway work with children and families primarily through home visiting (combined with social supports and group socialization activities). Home visitors interact with parents with the aim of strengthening the parent-child relationship, enhancing parenting skills, and supporting their efforts to provide an educationally stimulating and emotionally responsive home environment. These activities are then expected to lead to changes in the children's health, cognitive, social-emotional, and physical development.

Programs may follow multiple pathways for achieving their desired outcomes. In practice, their emphasis on each pathway varies. Hypothesized impacts depend on the balance adopted by the particular program, that is, whether it takes (1) predominantly a direct child pathway, with some parent and parent-child focus in the services offered; (2) predominantly an indirect pathway through parenting, with some direct child services added; or (3) a more equal balance between these two pathways. Program impacts may also vary depending on the emphasis placed on the indirect pathways through family support. Programs whose theory of change follows either a direct or an indirect path to child development also strive to strengthen family self-sufficiency and resources so that parents are better able to provide emotional and educational stimulation for their children and to interact with them in positive ways.

In general, programs that emphasize creating a balance of both direct and indirect pathways would be expected to have stronger impacts on parenting and family outcomes than programs that emphasize the direct child pathway. They would also be expected to have stronger child development outcomes than programs that emphasize the indirect pathway through parenting. Because little research has been conducted with programs that emphasize both pathways, the

Early Head Start evaluation examines more than one hypothesis. Programs emphasizing both pathways may have more flexibility to respond to the varying needs of families, by providing predominantly home visiting, predominantly center care, or a mixture of the two that is tailored to the needs of the individual family. This flexibility may create a synergy that leads to effects greater than the sum of the effects of the two approaches alone. On the other hand, it is possible that in the short term, some dilution in both child and parent/family impacts could occur if emphasizing both pathways stretches the program's resources or creates complex operational challenges.

In the context of this basic conceptual framework, each of the chapters describing program impacts on children, parenting, and families (Chapters IV through VI) begins with a detailed discussion of hypothesized effects in each outcome area.

C. THE EARLY HEAD START PROGRAMS, FAMILIES, AND COMMUNITIES

1. The 17 Early Head Start Research Programs

Unlike some programs, Early Head Start does not embrace a particular program "model," but asks each grantee to select service delivery options that will best meet the needs of the families and communities it serves. The period of dynamic change (since the initiation of Early Head Start) has provided ample opportunity for program adaptations over time. Each program has strived to implement the revised performance standards, find the approach (or mix of approaches) that will continue to meet changing family needs, and strengthen strategies that will promote children's development. Early Head Start programs try to meet families' and communities' needs through one or more program options: (1) home-based, (2) center-based, (3) combination (in which families receive both home visits and center experiences), and (4) locally designed.

Because a *program* may offer multiple options, we characterized programs for research purposes according to the options they offer *families:*

- Center-based programs, which provide all services to families through the *center-based option* (center-based child care plus other activities) and offer a minimum of two home visits a year to each family
- Home-based programs, which provide all services to families through the *home-based option* (weekly home visits and at least two group socializations a month for each family)
- Mixed-approach programs, which provide services to some families through the *center-based option* and to some through the *home-based option,* or provide services to families through the *combination* or *locally designed option* (services can be mixed in the sense of programs targeting different types of services to different families or in the sense that individual families can receive a mix of services either at the same time or at different times; thus, in different ways, programs adjust the mix of home- and center-based services to meet the needs of families)

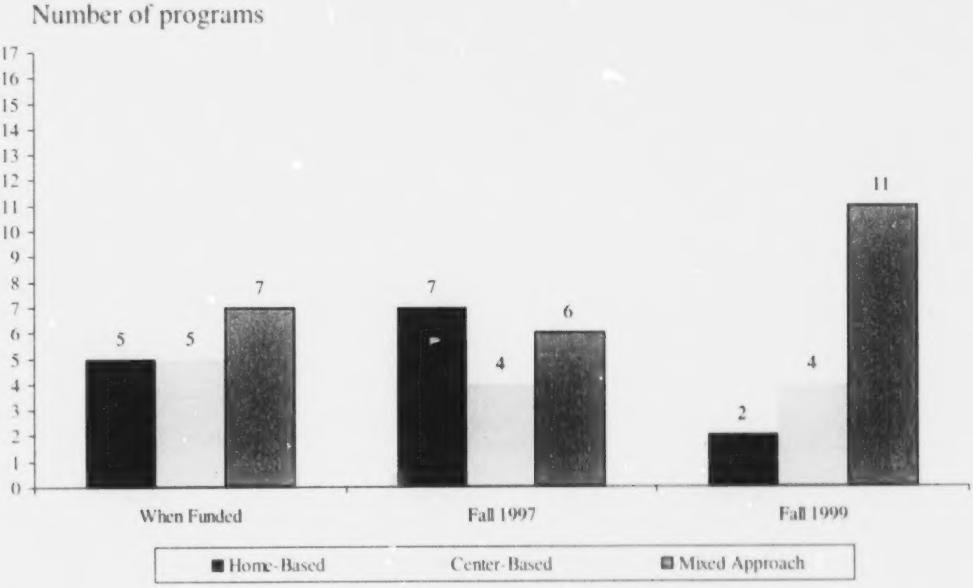
The 17 programs selected to participate in the national Early Head Start Research and Evaluation Project include 16 Wave I programs (the 68 programs funded in 1995) and 1 Wave II program, funded in 1996. They are located in all regions of the country and in both urban and rural settings, and they include all major Early Head Start program approaches. The families served are highly diverse, as described later.

When funded, the research programs were about equally divided among the three program approaches (Figure I.2). By fall 1997, the home-based approach predominated, having increased from five to seven programs (four were center-based and six were mixed-approach in fall 1997). Program approaches continued to evolve, and by fall 1999, most home-based programs had become mixed-approach.

This evolution in program approaches occurred as programs responded to changing family needs, particularly the increasing need for child care. Some programs changed their approaches in fundamental ways; others significantly altered services within their basic approach. Details of

FIGURE I.2

THE EVOLUTION OF PROGRAM APPROACHES OVER TIME



this evolution are described in the *Pathways to Quality* report, but we summarize key changes here. Comparing programs in 1997 and 1999 (the two periods in which we obtained detailed implementation data from site visits), we see that:

- The four programs that began with a center-based approach remained center-based throughout but enhanced their programs in a variety of ways, such as achieving NAEYC accreditation; strengthening staff development; adding more classrooms; reducing group sizes; making changes that promoted greater continuity of care; collaborating more closely with welfare-to-work case managers; and expanding health, nutrition, and mental health services.
- Two of the seven home-based programs remained home-based while adding enhanced support for families' efforts to use good-quality child care.
- Five of the seven home-based programs expanded services options to such an extent that by fall 1999 they had become "mixed" in their approach to serving families. The changes included (1) helping families find good child care and paying for quality child care that some home-based families used, (2) adding a child care center to serve a small portion of the enrolled families for whom the home visiting approach was not appropriate, (3) working with community partners to improve community child care, and (4) visiting children in their child care settings as well as in their homes.
- The six mixed-approach programs continued taking a mixed approach, but by 1999 they had expanded some service options, including obtaining state funding to enhance the program's ability to provide child care assistance, increasing home visit time spent on parent-child activities, taking formal steps to ensure that child care providers used by Early Head Start families met the revised Head Start Program Performance Standards, adding child care classrooms, and improving collaborations with the local child care licensing office.

Research programs varied along a number of dimensions that provide important context for their evaluation. One dimension is the variety of experiences programs brought to their new mission as Early Head Start grantees. Most of the grantee agencies had experience offering infant-toddler services: nine of the grantees had operated Head Start programs; one had previously operated a Parent Child Center (PCC) as well as Head Start; seven had been Comprehensive Child Development Programs (CCDPs) (five of these were new to Head Start but had served infants and toddlers); and three of the grantees without Head Start, PCC, or

CCDP experience had operated other community-based programs. Several programs operated in multiple sites within their service area. The experience of the Mid-Iowa Community Action Early Head Start Program is highlighted in Box I.1, which illustrates how some programs design their services to meet the needs of the local community.

2. The Families That Early Head Start Research Programs Served

Table I.1 displays key characteristics of the 1,513 Early Head Start families at the time they entered the program. At the time of enrollment, primary caregivers were diverse[3]:

- Early Head Start applicants (99 percent of whom were mothers) were on average 23 years old. The mean age across the programs ranged from 18 to 26. About 62 percent were first-time parents.
- One-fourth of the primary caregivers lived with a spouse. Slightly more than one-third lived with other adults, and a similar proportion lived alone with their children.
- Slightly more than one-third of families enrolled in Early Head Start were headed by teenage parents. The percentage ranged from 19 to 90 across the 17 programs. Two programs had a special emphasis on serving teenage mothers, with more than half their families headed by a teenager.
- Overall, one-third of families were African American, one-fourth were Hispanic, and slightly more than one-third were white (with a small percentage in other groups). Eleven programs were relatively homogeneous, with at least two-thirds of the families representing a single racial/ethnic group (four programs enrolled predominantly African American families, three were predominantly Hispanic, and five were predominantly white); in six, the racial/ethnic composition was diverse.
- Overall, one-fifth of the Early Head Start primary caregivers did not speak English as their primary language, although in two programs more than half reported not speaking English well.

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[3] We describe program and family characteristics at the outset of the study based on data from the Head Start Family Information System (HSFIS) application and enrollment forms that families completed at the time of application to the program. Programs submitted these forms to MPR for random assignment, and the date of the families' random assignment is used as the starting point for considering the timing of services and events captured by the evaluation. In most cases, program enrollment occurred within a month of random assignment.

BOX I.1

THE CHALLENGES OF EARLY HEAD START SERVING RURAL AREAS: CENTRAL IOWA

Kathie Readout
Mid-Iowa Community Action Early Head Start

Mid-Iowa Community Action (MICA) began by choosing a home-based model as the best way to reach the largest number of Early Head Start-eligible families throughout five counties in central Iowa. The home-based model was appropriate to the widely dispersed population that MICA served. MICA's five-county service area averages 60 people per square mile, compared with 2,500 in Des Moines, Iowa's largest city, or with 20,000 in Chicago. Half the population lives in towns with a population less than 10,000 or in unincorporated areas. The largest city in each of the two "urbanized" counties has 27,000 and 50,000 inhabitants, respectively. Only two cities in the three rural counties have more than 3,000 inhabitants.

Families live in small towns because they grew up in them and so they can be near extended family. Some families seek out the lower housing costs in small towns. Because growth in the economy over the past decade has concentrated in larger towns and cities, families living in small towns must seek jobs and services outside the communities in which they live. Welfare reform has cut the TANF rolls in half. Yet despite historically low unemployment rates (three to four percent in MICA's service area), the jobs low-income adults are able to obtain do not support their families. Low wages have made Iowa the state with the second-highest percentage (82 percent) of families in which either both adults in two-parent families work or the single parent in one-parent families works. Jobs for which the greatest number of openings exist in central Iowa (retail, services, manufacturing) pay modest wages ($8 to $10 per hour), and are the least likely to be full-time and to include fringe benefits such as health insurance. Only 14 of 77 (18 percent) Early Head Start children are covered by private, third-party health insurance.

The most common reason for children leaving Early Head Start is a family move out of the service area, usually driven by the parents seeking jobs elsewhere. The 1998 Bureau of Economic Analysis (U.S. Census) figures place Iowa second to the bottom in average income per job when compared with the six contiguous states: $25,861 per year or an hourly wage equivalent of $12.43. In contrast, average wages per job in Missouri, Minnesota, and Illinois were 12, 21, and 42 percent higher, respectively.

The second most prevalent reason parents give for taking their children out of Early Head Start is lack of time to meet with Early Head Start staff for home visits. Working adults in rural families nearly always have to commute. It is necessary to own a personal vehicle, as public transportation is too limited and inflexible to be useful for getting to work or for keeping most appointments.

Working low-income adults have great difficulty finding affordable, quality child care. Because parents often commute, children spend long hours in child care. One Early Head Start parent recently lobbied for her child to be selected into an already full MICA toddler room, because she was going to school and had found no acceptable care alternative. Few small towns can support center-based child care. MICA has recognized three distinct responses it must offer to meet EHS family needs for quality child care: (1) center-based services in the largest cities with the population density to support centers; (2) home-based services to a small but important group of families; and (3) family care provider support, technical assistance, and professional development to raise the quality of care available where centers are not an option.

Geography affects how rural low-income families live their lives; it also shapes program options. A single Early Head Start model can not meet the work schedules and child development/child care needs of families in towns of dramatically different sizes that are distant from one another.

TABLE I.1

KEY CHARACTERISTICS OF FAMILIES ENTERING THE EARLY HEAD START RESEARCH PROGRAMS

	All Research Programs Combined (Percentage)	Range Across Research Programs (Percentage)
Primary Caregiver (Applicant) Is Female	99	97 to 100
Primary Caregiver Is a Teenager (Under 20)	39	19 to 90
Primary Caregiver Is Married and Lives with Spouse	25	2 to 66
Primary Caregiver's Race/Ethnicity		
African American	34	0 to 91
Hispanic	24	0 to 90
White	37	2 to 91
Other	5	0 to 14
Primary Caregiver's Main Language Is Not English	20	0 to 81
Primary Caregiver Does Not Speak English Well	11	0 to 55
Primary Caregiver Lacks a High School Diploma	48	24 to 88
Primary Caregiver's Main Activity		
Employed	23	11 to 44
In school or training	22	4 to 64
Other	55	24 to 78
Primary Caregiver Receives Welfare Cash Assistance (AFDC/TANF)	36	12 to 66
Number of Applicants/Programs	**1,513**	**17**

SOURCE: Head Start Family Information System application and enrollment data.

- Nearly half the Early Head Start primary caregivers did not have their high school diploma at the time they enrolled (however, in four programs, two-thirds were high school graduates, and in three programs two-thirds were not).
- At enrollment, 45 percent of primary caregivers were employed or in school or training.
- Most families were receiving public assistance of some kind (77 percent were covered by Medicaid, 88 percent were receiving WIC benefits, almost half were receiving food stamps, just over one-third were receiving AFDC or TANF, and 7 percent were receiving SSI benefits).
- Approximately one-fourth of primary caregivers enrolled while they were pregnant. The percentage that were pregnant ranged from 8 to 67 percent across the programs.
- HSFIS items relating to families' needs and resources indicated that the greatest self-reported needs of parents were for adequate child care (34 percent of families overall, ranging from 11 to 68 percent across the programs); transportation (21 percent, ranging from 12 to 35); and medical care (14 percent overall, ranging from 3 to 36 percent).

Several local research teams worked with their program partners to collect baseline information about their families that would provide a richer understanding of families' characteristics than is available through the HSFIS data. Working with the Vermont program, the Harvard University researchers obtained information about their families' values and emotional health, and note the implications for families' ability to benefit from the program (Box I.2).

To be eligible for the research, the primary caregiver in the research program families had to be pregnant or have a child younger than 12 months of age. The Early Head Start children who were born at the time of enrollment also had diverse characteristics:

- They varied in age, with about half under 5 months. Including families in which the focus child was not yet born, the mean age at enrollment was 3.5 months. The mean age at enrollment ranged from 2.0 to 8.6 months across programs.
- About 10 percent of the born children had been born at low birthweight (under 2,500 grams), although the figure was 24 percent in one program.

BOX I.2

PARENTING VALUES AND EMOTIONAL HEALTH, ENGAGEMENT IN RESEARCH AND PROGRAM, AND PARENT-CHILD COMMUNICATION

Barbara Alexander Pan, Catherine Snow, and Leah Bratton
Harvard University and Early Education Services

Conducting research with and providing services to families experiencing the stress of poverty can be a formidable challenge. Many low-income families frequently relocate and do not have consistent phone service. One of the outcomes many Early Head Start programs target is the quality of parent-child interaction and communication, but intervention can be effective only if families are locatable and engaged with the program. Research carried out by the Harvard Graduate School of Education research team, in collaboration with Early Education Services in Vermont, suggests that parenting values and emotional health may influence parents' participation in the research study, their use of Early Head Start services, and their access to intervention with regard to parent-child communication and interaction.

At entry into the study, 133 parents living in Windham County, Vermont, completed the Child Abuse Potential Inventory (CAP) a 120-item questionnaire about parents' values and beliefs, emotional health, and relationships with others. Between 20 and 26 percent of parents scored above clinical thresholds for unhappiness, distress, problems with family or others, and/or child abuse potential, often despite apparent efforts to project socially desirable responses. Some months later, when their children were 14 months old, the study asked each parent to be videotaped at home interacting with her child with a set of toys. Seventy-six percent of parents who completed the CAP questionnaire at baseline were located and agreed to participate in this aspect of the study. However, of those parents whose earlier responses on the CAP questionnaire indicated potential for child abuse/neglect, only 57 percent participated. Least likely to participate in the videotaped parent-child interaction were those parents whose responses evidenced both potential for child abuse/neglect and effort to provide socially desirable responses. This variability in research participation was mirrored in program involvement. Of 17 parents in the program group who were at risk for dysfunctional parenting, 11 dropped out of the program within a few months. Only four (24 percent) engaged in the program in a meaningful way for more than a few months.

Previous research has shown that quantity and quality of adult communication predict children's rate of vocabulary growth, which in turn is highly predictive of children's later academic achievement. Because mothers differ widely in their degree of communicative engagement, it is important to provide intervention around parent-child communication to those experiencing the most difficulty. Unfortunately, the findings reported here suggest that those mothers may be among the parents most challenging to engage in programs such as Early Head Start, and furthermore, that they are often missing from the research picture because they have reservations about participating fully in the research and because researchers cannot locate them.

Parents experiencing stress with respect to the parent-child relationship may find it particularly difficult to engage in a program that focuses on parenting and child development. Often, help in overcoming social and environmental barriers must precede direct work on parenting and parent-child communication. For those high-risk mothers programs successfully engage, intervention can focus on ways of alleviating parenting distress and on cultivating parents' enjoyment of communicating positively with their children.

- We estimate that 20 percent of children who were born at the time of enrollment might have had—or were at risk for—a developmental disability.[4]

3. The Communities Served by Early Head Start Research Programs

The 17 research programs are distributed across the major regions of the country—six in the West, four in the Midwest, four in the Northeast or Mid-Atlantic, and three in the South. About half are in urban areas and half in small towns or rural areas, with home-based, center-based, and mixed-approach programs in each. Most programs are located in areas of low unemployment (the median 1998 unemployment rate was 3.8 percent). During this period, the national unemployment rate was about 4.5 percent. Four of the research programs are in cities or areas where unemployment exceeded 5.5 percent in 1998; the rates across those sites ranged from 5.5 to 10.4 percent. In these communities with higher unemployment rates, staff described job and job-training opportunities as inadequate.

Welfare reform influenced the community context in several ways. One key factor affecting Early Head Start families was whether or not the state (or, in some cases, the county) exempted mothers of infants under 12 months of age from the work requirements. Seven of the research programs operated in areas where there was no exemption. In these areas, mothers were expected to enter the workforce when their babies reached ages ranging from 6 weeks to 9 months.

A few programs described their communities as "service rich," yet all identified some services for low-income families that were inadequate or lacking. As Chapter III documents, families in the control group, who did not have the benefits of Early Head Start, generally received substantially fewer services. During implementation visits, staff reported the major service inadequacies in communities to be lack of affordable and high-quality child care, insufficient affordable housing, and poor public transportation.

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[4] In Chapter III, we present information that the primary caregivers supplied 6 and 15 months after random assignment. This contains more accurate data about the health and developmental conditions that are often associated with diagnoses of disabilities in young children.

4. How Early Head Start Research Programs Compare with All Funded Programs from Which They Were Selected

The 17 selected research programs reflect the populations served by all Wave I and II programs from which they were selected (Table I.2).[5] For example:

- The average number of families enrolled in the research programs (85) is very similar to the number in Wave I (81) and Wave II (84) programs.
- The racial/ethnic distribution is similar, but the research programs have a slightly larger percentage of African American families and a slightly smaller percentage of white families.
- The percentage of single- and two-parent families in the research programs is similar to the average percentage in the Wave I and II programs.
- About the same percentage of primary caregivers are in school or training.

Although the findings reported in subsequent chapters are not statistically generalizable to all Early Head Start programs, they are clearly relevant to the rest of the programs because (1) the research sites include the full range of locations and program approaches, and (2) the families served by the research programs resemble the families served by other Wave I and II programs. Thus, the lessons drawn from the experiences of these programs are likely to be applicable to the others.

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[5] This analysis compared family characteristics of the 17 research programs with those of all Wave I and II programs using the ACYF Program Information Report (PIR) database.

TABLE I.2

COMPARISON OF RESEARCH PROGRAMS AND WAVE I AND II PROGRAMS

	Wave I Programs (Percentage)	Wave II Programs (Percentage)	Research Programs (Percentage)
Total ACYF-Funded Enrollment			
10 to 29 children	6	0	0[a]
30 to 59 children	14	9	6
60 to 99 children	62	64	65
100 to 199 children	15	27	29
200 to 299 children	3	0	0
(Average)	(81)	(84)	(85)
Race/Ethnicity of Enrolled Children			
African American	33	21	34[a]
Hispanic	22	27	24
White	39	46	37
Other	6	5	5
English Is the Main Language	85	79	80
Family Type			
Two-parent families	39	46	40
Single-parent families	51	46	52
Other relatives[b]	7	5	3
Foster families	1	1	0
Other	1	1	5
Employment Status[c]			
In school or training	20	22	22
Not employed	48	48	55
Number of Programs	**66**	**11**	**17**

SOURCE: Head Start Family Information System application and enrollment data.

NOTE: The percentages for the Wave I and II Early Head Start programs are derived from available Program Information Report (PIR) data. The percentages for the Early Head Start research programs are derived from Head Start Family Information System application and enrollment data from 1,513 families.

Percentages may not add up to 100, as a result of rounding.

[a] The data for the research programs refer to families instead of children.

[b] The HSFIS data elements and definitions manual instructs programs to mark "other relatives" if the child is being raised by relatives other than his/her parents, such as grandparents, aunts, or uncles, but not if the child is being raised by his/her parents and is living with other relatives as well.

[c] The research program data and PIR data are not consistent in the way that they count primary caregivers' employment status, so it is not possible to compare the percentage of caregivers who are employed.

D. OVERVIEW OF THE EVALUATION

1. Description of the Evaluation

The National Early Head Start Research and Evaluation Project is a cross-site national study conducted by Mathematica Policy Research, Inc. (MPR) and Columbia University's Center for Children and Families at Teachers College, in collaboration with the Early Head Start Research Consortium. All together, the study encompasses the following components:

- ***Implementation Study.*** Issues related to program implementation have been addressed in the Early Head Start implementation study and reported in two sets of reports; see *Leading the Way* (Administration on Children, Youth and Families 1999, 2000a, 2000b) and *Pathways to Quality* (Administration on Children, Youth and Families 2001b).
- ***Continuous Program Improvement.*** Throughout the evaluation, reports and presentations have provided new information that all Early Head Start programs can use to enhance their ability to meet their families' needs.
- ***Impact Evaluation.*** Program impacts are the focus of this report and of the final report, to be completed in spring 2002.
- ***Local Research Studies.*** Elements of these are integrated in this report, in boxes throughout the chapters and in Appendix A. The local university research and program teams will report other local findings separately.
- ***Special Policy Studies.*** These include studies of issues relating to welfare reform, health and disabilities, child care, and fatherhood. Key findings from the Early Head Start fatherhood research are presented in this report. Special reports on child care and on health and disabilities will be issued separately, as will additional reports focused on particular issues related to father involvement.

The impact analyses (reported here) focus on program impacts on children and families; analyses of outcomes in the staff and community development areas are reported in the *Pathways to Quality* implementation report. The study is grounded in an experimental design in which about 3,000 families across the 17 program sites were randomly assigned to participate in Early

Head Start or to be in the control group. Special features of the study include[6]:

- Partnerships with 15 local research teams that permit the cross-site study to add site-specific findings from local research and to benefit from interpretations and perspectives of researchers and program staff at the local level
- The use of data from the implementation study to conduct targeted analyses based on subgroups of programs that vary by their approach to delivering services and levels of implementation
- Analysis of families' baseline characteristics to identify subgroups for whom the program may have differential effectiveness
- A detailed analysis of the services received by both program and control group families to understand program impacts better
- Analytic strategies using statistical adjustments to enable the findings to reflect impacts for the Early Head Start families who met a criterion for at least minimal program participation, as well as for all Early Head Start-eligible families

2. The Early Head Start Research Consortium

Under its contract with ACYF, MPR worked with the 15 local research teams, the 17 program directors from the research sites, and ACYF to create the Early Head Start Research Consortium. Beginning in April 1996, shortly after the local research grants were awarded, the consortium has met two or three times each year to review evaluation plans (including instruments, data collection procedures, and data analysis plans) and collaborate on various reporting and dissemination activities. As described in Appendix B, in all but one of the sites, local researchers were responsible for all data collection (conducted under subcontract to MPR). The consortium created several workgroups to carry out research activities related to special topics, such as welfare reform, fatherhood, health and disabilities, and child care. The evaluation reports (including this one and those listed on page ii) embody the spirit of collaboration, as committees of consortium members reviewed the plans for and early drafts of this report and local research and program partners contributed brief reports of local studies, which have been incorporated into this report. The consortium members and their member institutions are listed in Appendix F.

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[6] The details of these analytic features are described in Chapter II.

3. Overview of the Implementation Study and Its Findings

The national evaluation includes a comprehensive implementation study that measured the extent to which programs had become "fully implemented" in 1997 and 1999. The assessment of implementation was based on selected key elements of the program guidelines and the revised Head Start Program Performance Standards, as described in *Leading the Way* (Administration on Children, Youth and Families 1999 and 2000) and *Pathways to Quality* (Administration on Children, Youth and Families 2001b). Data were collected in three rounds of site visits, and a panel of site visitors, national evaluation representatives, and outside experts, using a consensus-based approach, assessed the degree of implementation both overall and separately for the child and family development areas (see Appendix C).

One-third (six) of the programs were judged to be fully implemented overall by the fall 1997 implementation visits and continued to be fully implemented in late 1999 while still expanding the numbers of families served. We refer to these as the *early implementers*. By fall 1999, two-thirds of the programs were fully implemented. We refer to the six that reached this level after 1997 as the *later implementers*. The remaining five programs did not achieve ratings of "fully implemented" during the evaluation period. We refer to them as the *incomplete implementers*, all of which nevertheless made strides in particular program areas and, in fact, showed a number of strengths. In general, these programs were not rated as "fully implemented" in child development and health services but tended to have strong family development services.[7]

As part of the implementation rating process, we also rated the degree of implementation of child development and health services, which included programs' efforts in (1) conducting developmental assessments, (2) individualizing child development services, (3) involving parents in child development services, (4) promoting group socializations, (5) providing child care that meets the performance standards, (6) supplying health services for children, (7) offering frequent child development services, and (8) providing services for children with disabilities. Eight programs achieved a rating of "fully implemented" in this area in 1997, a number that increased to nine by 1999.

In the area of programs' implementation of family partnerships, we considered programs' progress in (1) Individualized Family Partnership Agreements; (2) availability of services; (3) frequency of services; and (4) parent involvement in policymaking, operations, and governance. In fall 1997, 9 programs were rated as "fully" implemented in family partnerships; this increased to 12 programs by fall 1999. In addition, father involvement became increasingly important to programs (see Box I.3 and additional information in Chapter III).[8]

The implementation study also assessed key aspects of the quality of both home- and center-based child development services. We assessed the quality of child care received by program families, including the care provided in both Early Head Start centers and other community child care settings. See *Pathways to Quality* for a detailed description of our assessment of these data

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[7] As described in the *Pathways to Quality* report and Appendix C, ratings of "full implementation" were based on ratings of 24 program areas taken largely from the Head Start Program Performance Standards.

[8] We are grateful to the Ford Foundation for providing funding that enabled us to conduct a special "practitioners" survey of all father involvement activities in all Early Head Start programs.

BOX I.3

IMPLEMENTATION OF FATHER INVOLVEMENT ACTIVITIES

Programs increasingly created opportunities for the fathers and father figures of Early Head Start children to become involved in program activities and to be more involved with their children. Programs use a variety of strategies to engage fathers in activities ranging from participation in home visits to special events just for fathers, such as male support groups. In assessing program implementation of father involvement activities, we found through a special survey of programs in 1999 that about one-fourth of programs considered themselves to be at a mature or very mature stage in their efforts to involve fathers and becoming "father friendly."

We also learned through the implementation study site visits that about half the programs had a staff member who served as the male involvement coordinator or the person responsible for father involvement. We considered programs to be "fully implemented" in father involvement if they did at least two of the following: encouraged fathers to participate in regular program services, had staff responsible for working with and involving fathers, offered male support groups, provided recreational activities for men, used a special curriculum for males, or provided other services for males. Five programs were considered fully implemented in father involvement in both 1997 and 1999.

(Administration on Children, Youth and Families 2001b).[9] The assessments of the child care arrangements used by program families are based on both field staff observations of child care settings and data collected from program staff during site visits. Observations of child care settings were made in conjunction with the study's 14- and 24-month data collection and included use of the Infant/Toddler Environment Rating Scale (ITERS)[10] and the Family Day Care Environment Rating Scale (FDCRS),[11] as well as observed child-teacher ratios and group sizes.

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[9] A special policy report, to be released in 2001, on child care in Early Head Start will present a more extensive analysis of child care use and quality.

[10] The Infant/Toddler Environment Rating Scale (ITERS) (Harms, Cryer, and Clifford 1990) consists of 35 items that assess the quality of center-based child care. Each item is ranked from 1 to 7. A ranking of 1 describes care that does not even meet custodial care needs, while a ranking of 7 describes excellent, high-quality, personalized care.

[11] The Family Day Care Environment Rating Scale (FDCRS) (Harms and Clifford 1989) consists of 35 items that assess the quality of child care provided in family child care homes.

Our preliminary analysis for the implementation study indicates that the quality of care provided by Early Head Start centers during their first two years of serving families was good.[12] All nine programs that operated centers from the beginning scored above 4 (the middle of the minimal-to-good range) on the ITERS, with the average being 5.3 (in the good-to-excellent range). Observed child-teacher ratios and group sizes were low and well under the maximum allowed by the revised Head Start Program Performance Standards (below four children per teacher and eight children per group).

Our preliminary analysis suggests that the quality of care received by Early Head Start children in *community child care centers* varied widely and was minimal to good, on average. The average ITERS score in community child care center classrooms was 3.7 in 1997-1998 and 4.5 in 1998-1999. Observed child-teacher ratios and group sizes exceeded the maximums allowed by the performance standards. The preliminary observational data suggest that quality of care received by program children in family child care homes was consistently minimal. Average FDCRS scores were 3.5 in both time periods. Observed child-teacher ratios and group sizes were low.

In fall 1999, most of the 12 research programs with Early Head Start centers received good or high ratings on several factors that may be responsible for child care quality—curriculum, assignment of primary caregivers, and educational attainment of teachers. Among all research

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(continued)
Items in the FDCRS are also ranked from 1 to 7, with 1 describing poor-quality care and 7 describing high-quality care.

[12] These analyses are preliminary and based on observational data submitted by September 1999. Because we analyzed partial data, and because response rates were low in some sites, we may not have information for a representative sample of Early Head Start children's child care arrangements.

programs, between one-fourth and one-half received good or high ratings in monitoring and in training and support for child care providers.

Since the study was not able to observe home visits directly, we rated quality of child development home visits by considering program factors that are related to service quality. These included supervision, training, and hiring of home visitors; planning and frequency of home visits; and the extent to which staff reported that home visits emphasized child development and were integrated with other services. By fall 1999, 11 of the 13 programs that served some or all families in a home-based option received a good or high rating of quality, up from 9 programs in 1997. At the local level, researchers working with two home-based programs have delved more deeply into the home-visiting process, as described in Box I.4 and Box I.5.

BOX I.4

VOICES OF HOME VISITORS IN ONE EARLY HEAD START PROGRAM

Tracy Collins and Catherine Ayoub
Harvard University

Early Education Services in Brattleboro, Vermont, is a mature Early Head Start program in which home visitors are responsible for direct provision of services to families. In open-ended, one-on-one interviews, home visitors were asked about their work and professional development. Analysis of the interview data focused on home visitors' talk about their actual work, including how they plan for and carry out home visits, examples of "in the moment" decisions made while in a family's home, and their reflections on the satisfaction derived from relationships that work well and frustration with those that do not. Following are excerpts from the interview record (not their real names) that provide a glimpse into the goals and challenges faced by home visitors and the level of passionate commitment they feel toward families and children.

Home visitors see their first task as establishing and maintaining relationships with the family:

- I've seen the power of that healing relationship work wonders. I've never met a family that didn't want things to be better. It's not because I come and say "Oh, [you] should do this and this." It's because somebody nonjudgmental is coming every week and asking how you're doing and caring about you when you've never had that. It's definitely a process of learning about each other, how strong they are and how much they can take. (Randi)

Home visitors explain how they see their work with families as centering around, but not limited to, child development:

- Our main focus here is child development, [but] there's a lot of different things that go into [that]. (Lynn)
- We do parent education, case management, and early childhood education. We blend those into a home visit, leaning more on early childhood education according to the family's needs. (Tammy)

Home visitors also must deal with many challenges: finding ways to connect with families with histories of difficult or unsuccessful relationships, reassessing or re-establishing connections with families, and being willing to recognize how their own personal histories may interact with those of the families they serve:

- You've got to pick up on the priorities the family has, then go in through that door. I had one [mom] who used to dismiss me; [she] had a limit on how long she could tolerate me. (Tammy)
- Sometimes it's really hard, even if you have a good relationship with [a family], you're not sure what's going on for them, what they're really thinking about. You can just kind of miss the mark [sometimes]. (Hayley)
- I have to think it through, [ask myself] what's going on, why am I so upset over this? And then I look back and go, "Ah, she reminds me of me." It really is amazing because you have to be in touch with yourself, too. (Sara)

These examples illustrate some of the multiple levels on which home visitors approach their work with families. Findings from this study may help inform training and supervision of home visitors, as well as supplement more quantitative methods used in evaluating Early Head Start services provided through the home-visiting model.

BOX I.5

INSIDE HOME VISITS: A COLLABORATIVE LOOK AT PROCESS AND QUALITY

L. A. Roggman, L. K. Boyce, G.A. Cook, and X. Jump
Utah State University

For Bear River Early Head Start, serving northern Utah and southern Idaho, the target and setting of intervention are the mother and child in their home. Like many other home-based Early Head Start programs, Bear River Early Head Start is committed to this strategy for service delivery as a practical way to emphasize parent-child relationships and parent education in a mostly rural area. Home visit quality was assessed in this program (n = 92 families) using measures developed in collaboration with program staff. The families this program served during the evaluation period were predominantly white (82 percent), married (73 percent), and first-time parents (52 percent).

Multiple viewpoints of home visits are valuable, because each perspective represents a different view of the quality of home visits. These perspectives together indicated that the quality of home visits in this program was high. They also indicated that how well home visitors and parents worked together was related to how much program staff reported that parents benefited from the program. When researchers independently coded home visitors as more facilitative and parents as more engaged, program staff rated families as having better home visits and making more progress. When home visitors did not effectively facilitate parent-child interaction, and, even more important, when parents were not engaged, families were not seen as improving.

Development of this Early Head Start program was enhanced by its collaboration with researchers. The results of this evaluation were used to strengthen the quality of home visits. In response to feedback about variations in the quality of home visits, the program reexamined its home visit strategies and provided more extensive training and supervision for home visitors. Thus, the results of this evaluation were used to strengthen the quality of their home visits.

II. EVALUATION DESIGN, DATA, AND ANALYTIC APPROACHES

ACYF designed a thorough and rigorous evaluation to examine the impacts of Early Head Start on key child and family outcomes. This chapter summarizes the study design, the data sources and outcome variables used in this interim report, and our approach to conducting the impact analysis.

A. STUDY DESIGN

The evaluation was conducted in 17 sites where Early Head Start research programs were located. Once selected for participation in the study, programs began enrolling families and worked with MPR staff to coordinate with the requirements of random assignment.

1. Site Selection

When the 68 Early Head Start programs in the first wave were funded in late 1995, they agreed, as a condition of funding, to participate in local and national research if selected. ACYF then selected the research sites purposely from the first two waves of grantees (with 75 Wave II programs funded in mid-1996). In March 1996, 41 university research teams submitted proposals to the Head Start Bureau—in partnership with Wave I Early Head Start program grantees—to conduct local research and participate in the national evaluation. ACYF selected 15 research sites, using a number of criteria including that programs (1) had to be able to recruit twice as many families as they could serve; (2) had to have a viable research partner; and (3) in aggregate, had to provide a national geographic distribution that represented the major programmatic approaches and settings and reflected diverse family characteristics thought to be typical of Early Head Start families nationally. These criteria resulted in an underrepresentation of center-based programs, so in 1996 ACYF selected one additional center-based program from

Wave I, and in late 1997 selected another center-based program (without a local research partner) from Wave II, resulting in the full sample of 17 programs.

As shown in Chapter I (Table I.2), the features of the 17 programs, as well as the characteristics of their enrolled families and children, are similar to those of all Early Head Start programs funded during 1995 and 1996. Thus, although the study results cannot be formally generalized to all Early Head Start programs, the findings about effective program practices and their impacts on children and families are likely to be indicative of Early Head Start impacts more broadly.

2. Sample Enrollment

Although Wave I grantees entered Head Start with varying degrees and types of experiences (see Chapter I), all had been asked not to enroll any families until it was decided whether they would be selected for the research sample. Because all programs had agreed, in submitting their original proposals, to participate in the random assignment process if they were selected for the research sample, it was not necessary to persuade any of the programs to cooperate. Thus, as soon as the programs were selected, beginning in spring 1996, MPR staff began working with their staffs to implement the random assignment process in conjunction with each program's regular enrollment procedures. Except for recruiting about twice as many families as they could serve, programs were expected to recruit as they would in the absence of the research, with special instructions to be sure to include all the types of families that their program was designed to serve (including those whose babies had disabilities). MPR and ACYF created detailed procedures (outlined in a "frequently asked questions" document—see Appendix E.II.A) to guide the sample enrollment process.

3. Random Assignment

As soon as programs determined through their application process that families met the Early Head Start eligibility guidelines, they sent the names to MPR, and we entered the names and identifying information into a computer program that randomly assigned the families either to the program or the control group (with equal probabilities). Program staff then contacted the program families, while representatives of the local research partners notified the control group families of their status.

Control group families were not allowed to receive Early Head Start services until their applicant child reached the age of 3, although they were told they could receive other services in the community. This ensures that our analytic comparisons of program and control group outcomes represent the effects of Early Head Start services relative to the receipt of all other community services that would be available to families in the absence of Early Head Start.

Some program staff were concerned that random assignment might, by chance, result in denial of services to families with particularly high service needs. ACYF was very clear, however, that the study findings should pertain to all families and children that Early Head Start was designed to serve, particularly infants and toddlers with disabilities. To address program concerns, however, ACYF and MPR established a process by which programs could apply to have a family declared exempt from participating in the research. (No exemptions were requested.)

Sample enrollment and random assignment began in July 1996 and was completed in September 1998. In most sites, sample intake occurred over a two-year period, although some took less time. The extended enrollment period was due in part to the extra work involved in recruiting twice as many families as programs were funded to serve, and in part to the process of new programs working out their recruitment procedures. Two programs completed sample enrollment in late 1997, and one (the 17th site) did not begin sample intake until fall 1997. Thus, the study population for the evaluation includes Early Head Start-eligible families who applied to the program between late 1996 and late 1998.

During the sample intake period, 3,001 families were randomly assigned to the program (1,513) and control (1,488) groups (Table II.1). The samples in most sites include between 150 and 200 families, fairly evenly divided between the two research groups.

Early Head Start staff implemented random assignment procedures well. We estimate that about 0.7 percent of all control group members received any Early Head Start services (that is, were "crossovers"), and most sites had no crossovers.[1] Furthermore, our discussions with site staff indicate that information on nearly all eligible families who applied to the program during the sample intake period was sent to MPR for random assignment (that is, site staff did not provide Early Head Start services to families who were not submitted for random assignment). Hence, we believe that the research sample is representative of the intended study population of eligible families, and that any bias in the impact estimates due to contamination of the control group is small.

Random assignment yielded equivalent groups: the average baseline characteristics of program and control group members are very similar (Appendix D). This is as expected, because MPR used computer-generated random numbers to assign families. Therefore, the only difference between the two research groups at random assignment was that the program group was offered Early Head Start services and the control group was not. Thus, differences in the

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[1] Site staff reported that 10 control group families in 5 programs received Early Head Start services. One program had 4 crossovers, one program had 3 crossovers, and 3 programs had 1 crossover each.

TABLE II.1

EVALUATION SAMPLE SIZES, BY SITE AND RESEARCH STATUS

Site	Program Group	Control Group	Combined Sample
1	74	77	151
2	93	86	179
3	84	78	162
4	75	72	147
5	74	76	150
6	115	110	225
7	104	108	212
8	98	98	196
9	98	95	193
10	71	70	141
11	104	96	200
12	73	79	152
13	104	98	202
14	75	71	146
15	90	92	182
16	95	95	190
17	86	87	173
All Sites	**1,513**	**1,488**	**3,001**

NOTE: Sites are in random order.

subsequent outcomes of the two groups can be attributed to the offer of Early Head Start services with a known degree of statistical precision.

B. DATA SOURCES AND OUTCOME MEASURES

Comprehensive data from multiple sources were used to examine the short-term effects of Early Head Start participation on a wide range of child, parenting, and family outcomes. This section provides an overview of data sources and outcome measures used for the analysis, the interview and assessment response rates, and the timing of interviews. These topics are discussed in more detail in the Appendixes.

1. Data Sources

The follow-up data used for the analysis are both time- and age-based. Each family's use of services and progress toward self-sufficiency were seen as likely to be a function of the amount of time since the family applied for Early Head Start services. Therefore, these data were collected at selected intervals following random assignment. Other data—particularly those related to child and family development—were more likely to be a function of the increasing age of the focus child over time. Thus, the data collection schedule for these developmental outcomes was tied to children's birth dates. The data sources used in this report include:[2]

1. ***Parent Services Follow-Up Interview (PSI) Data Targeted for Collection 6 and 15 Months After Random Assignment.*** These data contain information on (1) the use of services both in and out of Early Head Start (such as the receipt of home visits, and of services related to case management, parenting, health, employment, and child care); (2) progress toward economic self-sufficiency (such as employment, welfare receipt, and participation in education and training programs); (3) family health; and (4) children's health. Most PSIs were conducted by telephone with the focus child's primary caregiver, although some interviews were conducted in person for those not reachable by phone.

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[2] As explained later, the child and family impact analyses focused primarily on the 24-month birthday-related data.

2. ***Parent Interview (PI) Data Targeted for Collection When Children Were 14 and 24 Months Old.*** These interviews obtained a large amount of information from the primary caregivers about their children's development and family functioning. These data were usually collected in person, but some PIs or portions of them were conducted by telephone when necessary.

3. ***Child and Family Assessments Targeted for Collection When Children Were 14 and 24 Months Old.*** Field interviewers provided data on their observations of children's behavior and home environments. Interviewers conducted direct child assessments (such as Bayley assessments) and videotaped structured parent-child interactions. Several measures constructed using these data overlap with those constructed from the PI data, which allowed us to compare impact findings using the two data sources.

4. ***Father Interviews Targeted for Collection When Children Were 24 Months Old.*** In addition to asking mothers about the children's father, we interviewed the men directly about fathering issues at the time of the 24-month birthday-related interviews.[3] The father study was conducted in 12 sites only.

5. ***Baseline Data from the Head Start Family Information System (HSFIS) Program Application and Enrollment Forms.*** We used these forms, completed by families at the time of program application, to create subgroups defined by family characteristics at baseline, and to adjust for differences in the characteristics of program and control group members when estimating program impacts. We also used the forms to compare the characteristics of interview respondents and nonrespondents, and to construct weights to adjust for potential nonresponse bias.

6. ***Data from the Implementation Study.*** Finally, the analysis used data from the implementation study to define subgroups based on program site characteristics (such as program approach and level of program implementation) and site characteristics (such as welfare regulations).

MPR prepared all the follow-up data collection instruments and trained all field staff. In all sites but one (where MPR collected the data), data collection field staffs were hired by the local research teams, who were responsible, under subcontract to MPR, for collecting the data and monitoring data quality. Respondents were offered modest remuneration and a small gift to complete each set of interviews and assessments. Appendix B describes the data collection procedures in more detail. Details about all the measures can be found in Chapters IV, V, and VI and in Appendix C.[4]

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[3] The father study is supported with funding from the National Institute of Child Health and Human Development, the Ford Foundation, and the Office of the Assistant Secretary for Planning and Evaluation. The father interviews and father-child interaction assessments are also being done when the children are 36 months of age.

It is important to recognize that linking PIs and child and family assessments to the age of the child rather than to a fixed period after random assignment means that at the time those instruments were administered, families were exposed to the program for different lengths of time. Nevertheless, questions about children's development at particular ages are policy relevant. It is also of policy interest, however, to assess impacts for children and families with similar lengths of exposure to the program. Therefore, as described in Section C, we estimated impacts by doing subgroup analyses based on the child's age at random assignment (so that program participation times would be similar within each age group).

It is also important to recognize that at the 14-month birthday-related interviews, many families had been exposed to Early Head Start for only a short time, and especially so for families with older focus children. Thus, we do not expect impacts to appear at 14 months. In this report, we focus on the child, parenting, and family outcomes when children are 2 years old.

In sum, in this report we present impact findings using follow-up data from the 6- and 15-month PSIs, and from the 14- and 24-month PIs and child and family assessments. Because of this limited follow-up period, the findings should be considered *short term*. The final report will present longer-term findings using 26-month PSI and 36-month PI and assessment data, after program group families have had more exposure to Early Head Start services.

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[4] A number of Early Head Start evaluation data are outside the purview of this report but will be reported elsewhere. These include more detailed information than reported in Chapter I on the quality of child care used by families in the sample. In addition, additional PSI data are being collected at 26 months after random assignment and upon families' exit from the program, and additional birthday-related assessments, interviews, and videotaping are being completed when children turn 36 months of age. The child care data will be the subject of a special policy report; the additional service use and parent/child data will be reported in the project's final report in spring 2002.

2. Response Rates

Table II.2 displays overall response rates for key data sources by research status,[5] as well as response rates for various combinations of interviews. Interview respondents are sample members who provided data that could be used to construct key outcome variables. Nonrespondents include those who could not be located, as well as those who could be located but for whom complete or usable data were not obtained (Appendix B).

Response rates were higher for the PSIs and the PIs than for the Bayley and video assessments. Furthermore, as expected, response rates decreased somewhat over time. The rate was about 82 percent to the 6-month PSI and 75 percent to the 15-month PSI. It was 78 percent to the 14-month PI and 70 percent to the 24-month PI. At 14 months, it was 63 percent to the Bayley assessment and 66 percent to the video assessment, while at 24 months, it was about 58 percent to each. Rates were similar for program and control group members for all data sources, although they were consistently about 2 to 5 percentage points higher for the program group.

In general, the same families responded to the different interviews (Table II.2). For example, about 90 percent of those who completed a 24-month PI also completed a 14-month PI. Similarly, among those who completed a 24-month video assessment, about 99 percent also completed a 24-month PI, and about 90 percent also completed a 24-month Bayley assessment. Response rates differed across sites (Table II.3). The rate to the 15-month PSI ranged from about 60 percent to 85 percent, although it was 70 percent or higher in 14 sites. Response rates to the 24-month birthday-related instruments varied more, ranging from 43 percent to 86 percent

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[5] Response rates to the father interviews are discussed in Appendix B.

TABLE II.2

RESPONSE RATES TO KEY DATA SOURCES
(Percentages)

Data Source	Program Group	Control Group	Combined Sample
Parent Service Interviews (PSIs)			
6-Month	83.9	79.3	81.6
15-Month	75.3	73.7	74.5
Both	69.6	65.7	67.7
Parent Interviews (PIs)			
14-Month	79.1	77.1	78.1
24-Month	72.2	68.6	70.4
Both	65.9	62.0	64.0
Bayley Assessments			
14-Month	64.2	61.2	62.7
24-Month	60.1	55.7	57.9
Both	46.5	42.7	44.6
Video Assessments			
14-Month	66.5	65.2	65.8
24-Month	60.3	55.0	57.7
Both	49.8	46.2	48.1
Combinations			
PSI 15 and PI 24	63.7	61.4	62.6
PI 24 and Bayley 24	59.2	55.2	57.2
PI 24 and Video 24	59.6	54.6	57.1
Bayley 24 and Video 24	54.1	49.9	52.0
PI 24, Bayley 24, and Video 24	53.7	49.7	51.7
Sample Size	**1,513**	**1,488**	**3,001**

TABLE II.3

RESPONSE RATES TO THE 15-MONTH PSI, 24-MONTH PI AND 24-MONTH ASSESSMENTS, BY SITE
(Percentages)

	15-Month PSI		24-Month PI		24-Month Bayley		24-Month Video	
Site	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group
1	77	65	84	69	78	65	82	65
2	74	70	66	62	48	30	46	30
3	82	91	70	83	48	59	58	68
4	77	67	87	65	69	49	81	53
5	65	61	80	72	64	55	68	57
6	65	76	68	73	57	66	50	52
7	62	59	43	44	44	38	38	36
8	84	85	82	77	59	64	74	69
9	68	73	59	52	53	44	42	36
10	62	63	48	47	44	43	42	39
11	83	78	63	64	54	55	55	51
12	78	70	82	71	66	51	64	54
13	78	79	77	78	71	67	70	72
14	80	86	77	78	64	65	57	59
15	78	80	79	80	56	69	46	59
16	81	78	82	76	82	67	81	72
17	87	71	92	81	72	58	83	66
Total	**75**	**74**	**72**	**69**	**60**	**56**	**60**	**55**

NOTE: Sites are in random order.

to the 24-month PI. Twelve sites had a rate greater than 70 percent, but 3 sites had a rate less than 60 percent. The response rate to the 24-month Bayley and video assessments ranged from about 40 percent to 75 percent, with less than half the sites having a response rate greater than 60 percent. Response rates for the program group were substantially larger than those for the control group in some sites, although the reverse was true in a few sites.

Table II.4 displays response rates for key subgroups defined by site and family characteristics at random assignment. The family subgroups were constructed using HSFIS data collected at the time of program application, which are available for both interview respondents and nonrespondents. Asterisks in the table signify whether differences in the variable distributions of respondents and the full sample of respondents and nonrespondents are statistically significant at the 5 percent level. We conducted separate statistical tests for the program and control groups. Appendix D presents detailed results from the nonresponse analysis.

We find some differences in response rates across groups of sites. Response rates for the *program* group were higher in the center-based programs than in the home-based and mixed-approach ones, although rates for the *control* group were similar across program approaches. Thus, differences in response rates between the program and control groups were largest in the center-based programs. Interestingly, rates for both research groups were higher in sites that were fully implemented than in the incompletely implemented sites.

Response rates also differed across some subgroups defined by family characteristics, and they increased with the education level of the primary caregiver. In addition, they were higher if the primary caregiver was employed at random assignment, if she was married or living with other adults, and if English was the primary language spoken at home. Response rates were also

TABLE II.4

RESPONSE RATES TO THE 15-MONTH PSI, 24-MONTH PI AND 24-MONTH BAYLEY AND VIDEO ASSESSMENTS, BY SUBGROUPS DEFINED BY SITE AND FAMILY CHARACTERISTICS

(Percentages)

	15-Month PSI		24-Month PI		24-Month Bayley		24-Month Video	
Site	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group
Site Characteristics								
Program Approach		*	*		*		*	
Center-based	76	67	78	66	66	54	73	56
Home-based	76	77	71	69	61	57	60	55
Mixed	74	74	70	70	56	55	54	54
Overall Implementation Level	*	*	*	*	*		*	*
Early Implementers	75	72	73	68	63	58	61	57
Later Implementers	81	77	79	75	63	55	68	60
Incomplete Implementers	69	71	64	62	54	54	51	47
Family Characteristics at Random Assignment								
Mother's Age at Birth of Focus Child			*		*		*	
Less than 20	74	75	69	68	56	57	57	57
20 or older	76	73	74	70	62	56	62	54
Mother's Education	*	*		*		*		
Less than grade 12	71	74	68	67	57	54	58	54
Grade 12 or earned a GED	80	71	75	66	63	53	62	55
Greater than grade 12	80	80	77	78	62	65	63	60

TABLE II.4 *(continued)*

	15-Month PSI		24-Month PI		24-Month Bayley		24-Month Video	
Site	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group	Program Group	Control Group
Race and Ethnicity								
White non-Hispanic	77	75	75	75	63	64	63	61
Black non-Hispanic	76	74	71	64	58	50	58	51
Hispanic	74	70	71	67	60	52	64	54
Welfare Receipt			*	*	*		*	*
Received welfare	75	72	68	66	56	54	55	52
Did not receive welfare	74	75	75	73	63	58	65	58
Primary Occupation			*		*		*	
Employed	75	76	80	72	65	58	70	57
In school or training	76	76	72	67	61	56	61	55
Neither	75	73	68	69	57	56	55	55
Primary Language								
English	76	75	73	70	60	57	60	57
Other	71	71	67	69	60	52	60	52
Living Arrangements		*		*		*		*
With spouse	76	76	73	77	62	62	62	60
With other adults	76	76	72	71	58	56	61	57
Alone	75	70	72	61	61	52	59	50
Random Assignment Date		*	*				*	
Before 10/96	77	76	72	66	62	57	60	55
10/96 to 6/97	75	78	68	70	58	58	53	53
After 6/97	73	67	76	70	61	53	67	57
Total	**75**	**74**	**72**	**69**	**60**	**56**	**60**	**55**

SOURCE: HSFIS, 15-month PSI, 24-month PI, 24-month Bayley, and 24-month video data.

* Difference between the variable distribution for interview respondents and the full sample is statistically significant at the 5 percent level.

slightly higher for whites than for African Americans and Hispanics, for older mothers than younger ones, and for families not receiving welfare than for those receiving it. The pattern of response rates across subgroups was similar for the program and control groups.

Importantly, we find fewer differences in the baseline characteristics of program and control group *respondents* (Appendix D). Very few of the differences in the distributions of the baseline variables for respondents in the two research groups are statistically significant. Thus, although we find some differences in the characteristics of respondents and nonrespondents, the characteristics of respondents in the two research groups appear to be more similar.

Our main procedure to adjust for potential nonresponse bias was to estimate impacts using regression models that control for differences in the baseline characteristics of program and control group respondents (see Section C below). We used a large number of control variables from the HSFIS forms to adjust for observable baseline differences between the two groups. We gave each site equal weight in the analysis (regardless of the response rates in each site). In addition, as discussed in Appendix D, we calculated sample weights to adjust for nonresponse, so that the weighted characteristics of respondents matched those of the full sample of respondents and nonrespondents. We used these weights in some analyses to check the robustness of study findings (see Appendix D).

These procedures adjust for nonresponse by controlling for *measurable* differences between respondents and nonrespondents in the two research groups. To be sure, there may have been *unmeasured* differences between the groups. However, because of the large number of baseline data items in the HSFIS forms, we believe that our procedures account for some important differences between the groups. Therefore, we are confident that our procedures yielded meaningful estimates of program impacts.

3. Timing of Interviews

Most interviews were conducted near their target dates (Appendix B). For example, the average 15-month PSI was conducted 16.6 months after random assignment, and about 80 percent were conducted between 12 and 18 months. Similarly, the average 24-month PI was conducted when the child was 25.1 months old, and about 85 percent were conducted when the child was between 23 and 27 months old. The corresponding figures for the Bayley and video assessments are very similar to those of the PIs.

On average, the 6- and 15-month PSI interviews were conducted 5 months before the 14- and 24-month birthday-related instruments, respectively (Appendix B). Thus, at the birthday-related interviews, most families had probably received more Early Head Start services than we report here.

The distributions of interview completion times were similar for program and control group families. Thus, it is not likely that impact estimates on outcomes (such as the child language and cognitive development measures) were affected by differences in the ages of program and control group children at the time the data were collected.[6] As discussed in Appendix C, we did not have a pertinent norming sample to age-norm these measures.

4. Outcome Variables

The Early Head Start evaluation was designed to examine the extent to which Early Head Start programs influence a wide range of outcomes. Four main criteria guided specification of the major outcome variables for the analysis: (1) selecting outcomes that are likely to be influenced significantly by Early Head Start on the basis of programs' theories of change and the results of previous studies, (2) selecting outcomes that have policy relevance, (3) measuring outcomes reliably and at reasonable cost, and (4) selecting outcomes that could be reliably compared over time.

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[6] To further test the age bias, we estimated impacts separately by the age of the child at interview completion by including in the regression models explanatory variables formed by interacting child's age with an indicator of whether the family is in the program group (see Section C). These results indicate that the estimated impacts on *all* key outcomes do not differ by the age of the child at interview completion (that is, the interaction terms are not statistically significant). Thus, we are confident that the impact estimates are not biased due to age differences of the children at interview completion.

The primary outcome variables for the analysis can be grouped into three categories:

1. Service use
2. Child development and parenting
3. Family development

Table II.5 summarizes the key categories of outcome variables in each area, as well as the data sources used to construct them. In the analysis, we first examine impacts for the service use outcomes, because we would not expect meaningful impacts on the child, parenting, and family outcomes unless program group families received substantial amounts of Early Head Start services *and* received more and higher-quality services than the control group. Examining the services received by control group families is crucial for defining the "counterfactual" for the evaluation, and for interpreting impact estimates on all other outcomes. These results are presented in Chapter III. Impact results for the child, parent, and family outcomes are presented in Chapters IV, V, and VI. A detailed discussion of the specific outcome variables for the analysis, the reasons they were selected, and the way they were constructed can be found at the start of each chapter.

TABLE II.5

CATEGORIES OF OUTCOME VARIABLES AND THEIR DATA SOURCES

Outcome Measure	Data Source
Service Use	
Home visits	6- and 15-Month Parent Services Interviews
Case management	
Parenting-related services	
Child care and child development services	
Services for children with disabilities	
Child health services and status	
Family health and other family development services	
Parenting Behavior, Knowledge, and the Home Environment	
Knowledge of child development, discipline strategies, and safety precautions	24-Month Parent Interview
Parent supportiveness, detachment, intrusiveness, and negative regard during a parent-child structured play task	Coding from Videotaped Parent-Child Structured Play Task (24 months)
Parent-child activities to support cognitive and language development	24-Month Parent Interview
Quality of cognitive and emotional support provided in the home environment	24-Month Parent Interview and Interviewer Observations
Father Involvement	24-Month Parent Interview
Child Development	
Child social and emotional well-being	
Child engagement, negativity toward parent, and sustained attention with objects during a parent-child structured play task	Coding from Videotaped Parent-Child Structured Play Task (24 months)
Emotional regulation, orientation/engagement	Interviewer Observations (24 months)
Aggressive behavior	24-Month Parent Interview
Child cognitive and language development	
Bayley Mental Development Index (MDI)	Direct Child Assessment (24 months)
Vocabulary production and sentence complexity	24-Month Parent Interview
Child Health Status	24-Month Parent Interview

TABLE II.5 *(continued)*

Outcome Measure	Data Source
Family Outcomes	
Parent's Health and Mental Health	24-Month Parent Interview
Depression	
Parenting stress	
Family Functioning	24-Month Parent Interview
Family conflict	
Self-sufficiency	6- and 15-Month Parent Services Interviews
Education and training	
Welfare receipt	
Employment and income	

5. Analysis Samples

We used different samples for the impact analysis, depending on the data source. The primary sample used to estimate impacts on outcomes from the 14-month PI data includes those who completed 14-month PIs. Similarly, the primary sample for analyses based on the 24-month PI data includes those who completed these interviews, and similarly for the 14- and 24-month assessments. Thus, we conducted separate analyses using each of these samples. As discussed below, we have not estimated growth curve models, because of the relatively short follow-up period, so it was not necessary that both 14- and 24-month data be available for all sample members.

We conducted the analysis of the service use and self-sufficiency outcomes using the sample of those who completed 15-month PSIs (*regardless* of whether a 6-month PSI was completed). Most of these outcomes pertain to the entire 15-month period since random assignment (for example, the number of home-visiting services received during the 15 months and the number of hours spent in education and training programs), so data covering the entire 15-month period were required to construct these outcomes. About 91 percent of those who completed a 15-month PSI also completed a 6-month PSI, and the remaining 9 percent who did not complete the 6-month PSI were asked about their experiences since random assignment in the 15-month PSI. Thus, complete data covering the 15-month period are available for all those in the 15-month analysis sample.

We did estimate impacts, however, using alternative sample definitions to test the robustness of study findings (see Appendix D). For example, we estimated impacts on 24-month outcomes using those who completed both the 14- and 24-month PIs, as well as those who completed all birthday-related interviews and assessments. Similarly, we estimated impacts on service use and self-sufficiency outcomes using those who completed both the 6- and 15-month PSIs. Our results using alternative samples were very similar, so in the main body of this report we present only results that were obtained using the primary analysis samples described above.

C. ANALYTIC APPROACHES

The Early Head Start impact analysis addresses the effectiveness of Early Head Start services on key child, parenting, and family outcomes from two perspectives. The global analysis examines the overall impacts of Early Head Start across all 17 sites combined, while the targeted analysis addresses the important policy questions of what works and for whom.

1. Global Analysis

In this section we discuss our approach for answering the question, Do Early Head Start programs have an effect on child, parenting, and family outcomes overall? Stated another way, we discuss our approach for examining the extent to which the 17 programs, on average, changed the outcomes of program participants relative to what their outcomes would have been had they not received Early Head Start services. First, we discuss our approach for estimating impacts per eligible applicant. Second, we discuss our approach for estimating impacts per participant (that is, for families that received Early Head Start services).

a. Estimating Impacts per Eligible Applicant

Random assignment was performed at the point that applicant families were determined to be eligible for the program. Thus, we obtained estimates of impacts per eligible applicant by computing differences in the average outcomes of all program and control group families. This approach yields unbiased estimates of program impacts on the *offer* of Early Head Start services, because the random assignment design ensures that no systematic observable or unobservable differences between program and control group members existed at the point of random assignment except for the opportunity to receive Early Head Start services.

We used regression procedures to estimate program impacts, for two reasons. First, the regression procedures produce more precise impact estimates. Second, they can adjust for any differences in the observable characteristics of program and control group members due to random sampling and interview nonresponse. However, we also estimated impacts using simple differences-in-means procedures to test the sensitivity of our findings to alternative estimation strategies (see Appendix D). The two procedures yielded very similar results; we present the regression-adjusted estimates in the main body of this report.

We estimated variants of the following regression model:

$$(1)\ y = \sum_{j=1}^{17} \alpha_j (S_j * T) + X\beta + \varepsilon,$$

where y is an outcome variable, S_j is an indicator variable equal to 1 if the family is in site j, T is an indicator variable equal to 1 if the family is in the program group, Xs are explanatory variables (that include site indicator variables), ε is a mean zero disturbance term, and α_j and β are parameters to be estimated. In this formulation, the estimate of α_j represents the regression-adjusted impact estimate for site j.[7]

An important aspect of our analytic approach was to give each site equal weight regardless of sample sizes within the sites. Early Head Start services are administered at the site level and differ substantially across programs. Thus, the site is the relevant unit of analysis. Accordingly, the global impact estimates were obtained by taking the simple average of the regression-adjusted impact estimates in each site.[8] The associated t-tests were used to test the statistical significance of the impact estimates.

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[7] The estimated standard errors of the impact estimates take into account the variance of outcomes within sites, but not the variance of impacts across sites. Thus, from a statistical standpoint, the impact estimates can be generalized to the 17 research sites only (that is, are internally valid), but not more broadly (that is, are not externally valid).

We included a large number of explanatory variables in the regression models (Table II.6 lists the categories of variables, and Appendix Table E.II.B provides variable descriptions and means). These variables were constructed using HSFIS data and pertain to characteristics and experiences of families and children prior to random assignment. We used two main criteria to select the explanatory variables: (1) they should have some predictive power in the regression models for key outcome variables (to increase the precision of the impact estimates); and (2) they should be predictors of interview nonresponse (to adjust for differences in the characteristics of program and control group respondents).[9] There was no theoretical reason to include different explanatory variables by site or to assume that the parameter estimates on the explanatory variables would differ by site. Thus, we used the same model specification for each site.[10,11] The regression R^2 values for key outcomes ranged from about .15 (for 24-month child

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[8] Appendix D presents impact estimates where sites are weighted by their sample sizes. These results are very similar to those presented in the main body of this report.

[9] We imputed missing values for the explanatory variables. If an explanatory variable was missing for 5 percent of cases or less, then missing cases were assigned the mean of the explanatory variable for nonmissing cases by site, research status, and race. If an explanatory variable was missing for more than 5 percent of cases, then we set the variable equal to zero for the missing cases and included as an explanatory variable an indicator variable that was set to 1 for missing cases and to zero otherwise.

[10] Several explanatory variables, however, did not pertain to some sites (Appendix Table E.II.B). For example, only 12 programs served families whose English was "poor," so the control variable for this measure varied only for families in those 12 programs.

[11] We also estimated models that included as explanatory variables measures of the number of months until the relevant interview was completed. However, these measures were uncorrelated with research status, because the distribution of completion times was very similar for program and control group families. Thus, the inclusion of these time measures did not change the impact estimates and were dropped for simplicity.

TABLE II.6

CATEGORIES OF CONTROL VARIABLES FOR REGRESSIONS

Family and Parent Characteristics

Age of Mother
Race
English-Language Ability
Education Level
Primary Occupation
Living Arrangements
Number of Children in the Household
Poverty Level
Welfare Receipt (AFDC/TANF; Food Stamps; WIC; SSI)
Has Inadequate Resources (Food, Housing, Money, Medical care, Transportation)
Previously Enrolled in Head Start or Another Child Development Program
Mobility in the Previous Year
Random Assignment Date

Child Characteristics

Age of Focus Child
Birthweight Less than 2,500 Grams
Gestational Age
Gender
Evaluation History
Risk Categories (Established, Biological/Medical, Environmental)

SOURCE: HSFIS application and enrollment forms.

language measures and parent-child interaction scales from the video assessments) to .30 (for Bayley assessment scores and 15-month education measures) to .50 (for measures of welfare receipt).

As discussed, we constructed weights to adjust for interview nonresponse. Our basic approach was *not* to use these weights in the regression models, because there is no theoretical reason to use them in this context (DuMouchel and Duncan 1983). However, to test the robustness of study findings, we estimated some regression models using the weights (see Appendix D). We also used weights to obtain all estimates of impacts using simple differences-in-means procedures. The weighted and unweighted impact results are very similar (see Appendix D).

At this stage, we have not estimated growth curve models, because of the limited follow-up period. We will estimate these models for the final report after the next rounds of follow-up data collection are completed.

b. Estimating Impacts per Participant

Random assignment occurred at the point of eligibility and not when families started receiving services. Hence, program and control group differences yield *combined* impact estimates for those who participated in Early Head Start and those who enrolled but did not participate.

An important evaluation goal, however, is to estimate impacts on those who received program services. Estimating impacts for this group is complicated by the fact that a straightforward comparison of the outcomes of program group participants and *all* control group members does not yield the desired impact on participants. Ideally, we would like to compare the outcomes of program group participants with control group families who would have participated in Early Head Start had they been in the program group. However, we cannot identify these control group families.

As discussed in Appendix D, we can overcome these complications by assuming that Early Head Start had no effect on families who enrolled but did not receive Early Head Start services. In this case, the impact per participant in a site can be obtained by dividing the impact per eligible applicant in that site by the site's program group participation rate (Bloom 1984). The estimated global impact per participant across all sites can then be calculated as the average of the estimated impacts per participant in each site.

A crucial issue is how to define a program participant. The key assumption that allows us to estimate impacts for participants is that the outcomes of those in the program group who enrolled but did not receive services would have been the same if they had instead been assigned to the control group (that is, the program had no effect on nonparticipants). Thus, in order to be confident that this (untestable) assumption holds, we need a conservative definition of a program participant.

A program group family was considered to be an Early Head Start participant if, during the 15 months after random assignment, the family received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, *or* participated in a group activity. This participation rate was 91 percent for the full program group. It ranged from 66 percent to 98 percent across the program sites, but exceeded 88 percent in 15 of the 17 sites. Because the participation rate was fairly high in most sites, the estimated impacts per eligible applicant and the estimated impacts per participant are very similar.[12]

c. Adjusting for Crossovers in the Control Group

As discussed, about 0.7 percent of control group members participated in Early Head Start. These crossovers were treated as control group members in the analysis to preserve the integrity of the random assignment design. Thus, the presence of these crossovers could yield impact estimates that are biased slightly downwards if the crossovers benefited from program participation.

The procedure to estimate impacts for participants can be adapted to accommodate the control group crossovers (Angrist et al. 1996). This involves dividing the impacts per eligible applicant by the *difference* between the program group participation rate and the control group crossover rate. These estimates, however, are very similar to the impacts per participant, because of the very small number of crossovers. For example, the impacts per participant in most sites were obtained by dividing the impacts per eligible applicant by about .90, whereas the impacts that adjust for the crossovers were typically obtained by dividing the impacts per eligible applicant by .893 (.90 – .07). Thus, for simplicity, we do not present the impacts that adjust for crossovers.

d. Presentation of Results

In Chapters IV through VII, where we report program effects on child, parenting, and family outcomes, and the effects on these outcomes for population subgroups, we present impact results for *participants.*[13] However, in Chapter III, where we report program effects for the service use outcomes, we present results for *eligible applicants* to understand the extent to which Early Head Start programs are serving eligible families, and to understand the services available to eligible families in the absence of Early Head Start. This analysis is critical to understanding program operations and implementation as well as program impacts.

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[12] The impact estimates per participant are slightly less precise than the impact estimates per eligible applicant, because the standard errors of the impact estimates per participant must take into account the estimation error of the participation rate in each site.

In the impact tables in Chapters IV to VII, we present the following statistics:

1. ***The Mean Outcome for Participants in the Program Group.*** This mean was calculated using the 91 percent of program group members who participated in Early Head Start (using the definition of participation discussed above).

2. ***The Mean Outcome for Control Group Members Who Would Have Been Early Head Start Participants If They Had Instead Been Assigned to the Program Group.*** This mean is not observed, but is estimated as the difference between the program group participant mean and the estimated impact per participant. We sacrifice technical accuracy for simplicity in the text, and refer to this mean as the "control group mean."

3. ***The Estimated Impact per Participant.*** As discussed, this impact was obtained by (1) dividing the regression-adjusted impacts per eligible applicant in each site by the program group participation rate in each site; and (2) averaging these site-specific impacts across sites.

4. ***The Size of the Impact in Effect Size Units.*** This statistic was calculated as the impact per participant divided by the standard deviation of the outcome variable for the control group times 100.

5. ***The Significance Level of the Estimated Impact.*** We indicate whether the estimated impact is statistically significant at the 1 percent, 5 percent, or 10 percent level. We *indicate* marginally significant findings at the 10 percent level, because we seek to identify patterns of program effects across the large number of outcomes and subgroups under investigation, and thus, relax the traditional 5 percent significance level threshold (see Section 3 below).

We present similar statistics in Chapter III for the impact findings on service use outcomes, except that the statistics pertain to eligible applicants rather than to participants only.

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[13] For completeness, we also present impacts on *eligible* applicants for selected child, parenting, and family impacts in Appendix D. These show essentially the same patterns of impacts as the analysis of impacts for participants that we present in the main body of this report.

2. Targeted Analysis

The targeted analysis uses a more refined approach than the global analysis to examine the effects of Early Head Start on key outcomes. The targeted analysis addresses the important policy questions of what works, and what works for whom. It focuses on estimating whether impacts differ (1) for sites with different program approaches, implementation levels, and community contexts; and (2) for families with different characteristics at the time of program application. Specifically, the targeted analysis addresses the following questions:

1. Do different program approaches have different program impacts?
2. Do different levels of program implementation result in differential impacts?
3. Do different community contexts result in differential impacts?
4. Do program impacts differ for children and parents with different baseline characteristics?

In this interim report, we do not address questions about the effects of different intensities of services, because it is too early to define accurately which program group families received intensive services and which did not (since service participation time is limited to about 16 months). In addition, we have not yet analyzed impacts as a function of the programs' expected outcomes, since many of the programs' expectations focused on children and families at the conclusion of their Early Head Start tenure.[14] We will address these questions when we have 36-month measures in the final report, in spring 2002. Future analyses will also assess the extent to which impacts on shorter-term outcomes (such as service use and some family and parenting outcomes) correlate with impacts on longer-term outcomes (such as child outcomes), and will examine the role of mediators of child, parenting, and family outcomes.

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[14] For discussion of the process of using theories of change to identify programs' expected outcomes, see *Leading the Way*, Volume I, Chapter II (Administration on Children, Youth and Families 1999a) and *Pathways to Quality*, Chapter III (Administration of Children, Youth and Families 2001b).

a. Program Approach, Implementation Level, and Community Context

Early Head Start programs tailor their program services to meet the needs of eligible low-income families in their communities, and select among program options specified in the Head Start Program Performance Standards. ACYF selected the 17 research sites to reflect Early Head Start sites more broadly, and thus the Early Head Start programs participating in the evaluation varied in their approach to serving families. Furthermore, they differed in their pattern of progress in implementing key elements of the revised Head Start Program Performance Standards. Accordingly, we examined how impacts varied by program approach, implementation level, and community context.

Impact results by program approach can provide important information on how to improve program services and to develop and expand the program. Variations in impacts across programs that achieved different levels of implementation may provide insights into the importance of fully implementing key program services. Because Early Head Start programs are required to tailor services to meet local community needs, it is very important to understand the conditions under which they can have various effects.

The specific subgroups defined by key site characteristics that we examined are displayed in Table II.7. The table also displays the number of sites and the percentage of research families (at the time of random assignment) who are included in each subgroup. Table II.8 displays these variables by site (so that the overlap in these site subgroups can be examined). We selected these groupings in consultation with ACYF and the Early Head Start Research Consortium. Because

TABLE II.7

SUBGROUPS DEFINED BY PROGRAM APPROACH, IMPLEMENTATION LEVEL, AND COMMUNITY CONTEXT

Subgroup	Number of Sites	Percentage of Families
Program Approach		
Center-based	4	20
Home-based	7	46
Mixed Approach	6	34
Overall Implementation Level		
Early implementers	6	35
Later implementers	6	35
Incomplete implementers	5	30
Implementation of Child Development Services		
Early implementers	6	34
Single-period implementers	5	27
Incomplete implementers	6	39
Implementation of Family Development Services		
Early implementers	7	43
Single-period implementers	7	41
Incomplete implementers	3	16
Whether State or County Has Work Requirements for TANF Mothers with Children Younger Than 1		
State has requirements	7	42
State has no requirements	10	58

SOURCE: Data from 1997 and 1999 site visits.

TABLE II.8

SUBGROUPS DEFINED BY SITE CHARACTERISTICS, BY SITE

		Implementation Level			
Site	Program Approach	Overall	Child Development	Family Development	Work Requirements for TANF Mothers With Infants
1	Center	Early	Early	Early	Yes
2	Home	Later	Incomplete	Single Period	No
3	Mixed	Later	Incomplete	Single Period	Yes
4	Center	Early	Early	Incomplete	Yes
5	Mixed	Incomplete	Single Period	Incomplete	No
6	Home	Incomplete	Incomplete	Single Period	Yes
7	Mixed	Early	Early	Early	No
8	Home	Later	Incomplete	Early	Yes
9	Home	Incomplete	Incomplete	Incomplete	No
10	Center	Incomplete	Single Period	Single Period	No
11	Home	Incomplete	Incomplete	Early	No
12	Mixed	Later	Single Period	Single Period	No
13	Home	Early	Early	Early	No
14	Mixed	Early	Early	Early	Yes
15	Mixed	Early	Single Period	Early	No
16	Home	Later	Single Period	Single Period	No
17	Center	Later	Early	Single Period	Yes

SOURCE: Implementation study data.

NOTE: Sites are in random order.

of the small number of sites included in the evaluation, we limited the analysis to a few key subgroups that would capture distinguishing features of Early Head Start programs that are policy-relevant and could be accurately measured.

For the analysis of impacts by program approach, we divided programs into four center-based, seven home-based, and six mixed-approach programs on the basis of their program approaches in 1997 (see Chapter I). As discussed throughout this report, because the three approaches offer different configurations of services, we expect differences in the pattern of impacts by approach (see, especially, discussions of the hypotheses relating to expected impacts in Chapters IV, V, and VI).

We used data collected from the implementation study site visits in fall 1997 and fall 1999 to assess the degree of implementation in each of the research programs (see Chapter I). We then divided programs into (1) early implementers (six sites), (2) later implementers (six sites), and (3) incomplete implementers (five sites). The early implementers became "fully implemented" by 1997 and remained so at the time of the 1999 site visits, while the later implementers were not fully implemented in 1997 but were by 1999. The incomplete implementers had still not achieved full implementation by 1999, although they demonstrated a number of strengths in particular programmatic areas.[15] Some programs that were fully implemented overall were not fully implemented in one of the two areas relating to the delivery of key program services: child development and family development. Accordingly, we also examined impacts separately for groups of programs defined by their level of implementation in child development services and family development services. Though there was some overlap in these three implementation measures (Table II.8), we believe that there were enough differences to warrant separate analyses for each one.

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[15] The assessment of levels of implementation is directly linked to the revised Head Start Program Performance Standards, and involved a systematic and rigorous process that is described fully in Chapter II of *Leading the Way*, Volume III (Administration on Children, Youth and Families 2000) and summarized in Appendix C of this report.

Clearly, we expect impacts on child, parenting, and family outcomes to be larger in the fully implemented programs than in the incompletely implemented programs, because the fully implemented programs delivered services that were more intensive, more comprehensive, and of higher quality. Similarly, we expect impacts to be larger in the programs that became fully implemented earlier than in those implemented later.

Assessing impacts by the level of implementation is complicated by the fact that the fully implemented programs were not evenly distributed across the program approaches, as can be seen in Table II.8. For example, only one of the seven home-based programs was an early implementer, as compared to two of the four center-based programs and three of the six mixed-approach programs. Thus, comparing all implementers to all nonimplementers confounds impact differences by implementation level with impact differences by program approach. Therefore, we also estimated impacts for subgroups defined by interacting program approach and implementation level. Because of sample size constraints, this analysis focused on comparing estimated impacts for the three *mixed* programs that were early implementers to those of the three *mixed* programs that were not early implementers (see Appendix D).

We created an additional site-level subgroup defined by whether or not the state or county had work requirements for mothers who were receiving TANF and who had children younger than 12 months. Hypotheses of expected impacts for these groups are discussed in Chapter VI.

The ability of the national evaluation to assess the community context was somewhat limited. A number of the local research teams conducted in-depth research in their program communities, however. Box II.1 illustrates the application of ethnographic research in the Pittsburgh and Denver sites.

BOX II.1

ETHNOGRAPHY AND THE EARLY HEAD START EVALUATION: CONTRIBUTIONS FROM LOCAL RESEARCH TO UNDERSTANDING PROGRAM PROCESSES AND CONTEXT

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While the national Early Head Start evaluation follows a traditional random-assignment research design, with quantitative measures of process and outcome, several sites included anthropological work as part of their local research. They did this to more fully tell the story of program implementation and to document the sociocultural contexts in which programs operated. Two of these sites are Denver-Family Star and Pittsburgh.

Ethnographic research at Denver-Family Star was designed to illuminate the ways in which the families the Early Head Start program served accepted or rejected Early Head Start with a Montessori emphasis. The first year of this research was devoted to understanding the program intervention through twice-a-week, half-day sessions of participant-observation in the classrooms. After the program had been open for one year, 12 families were recruited into a home visit phase of the study. In this component of the study, the ethnographer visited families at six-month intervals after their children had been in the program one year to understand how parents understood the intervention and how it had affected them and their children.

Perhaps the most striking finding in this research was the extent to which parents became vocal advocates for Montessori over the course of their involvement with the program. The preliminary results from this ethnographic research have emphasized that, contrary to what may have been believed about Montessori prior to the program's experience, low-income parents appreciated and valued the changes that they saw it produce in their children.

Ethnographic research at the Pittsburgh site was designed as a series of nested investigations: (1) exploration of community and policy developments that influence operation of the Early Head Start program, (2) participant observation of Early Head Start program activities and focus groups with program staff to trace shifts in the program's theory of change, and (3) ethnographic interviews with program families about their program experiences and understanding of key program components. Integration of these three strands of research makes the relationships among community context, program implementation, and family perspectives clear.

For example, researchers found that changes in welfare policy created increased need for out-of-home child care. This led to new challenges for this home-visiting program, whose theory of change focused on the parent-child relationship as the primary vehicle for child development. Ethnographic interviews with Early Head Start families revealed some of the reasons they choose informal neighbor/relative care for their children when the parents go to work. Information from these interviews led the Early Head Start program to expand home-visiting services to informal child care providers and to partner with formal care providers to ensure quality and improve access. In this way, the program's theory of change was elaborated to respond to both changing community contexts and increased understanding of family cultures.

These descriptions of ethnographic work in two sites provide insight into the meaning of interventions for families and staff. This information will be valuable in documenting the stories of these programs and the families they serve. It will also provide insight into aspects of program process that were not anticipated in the design of the randomized trial.

Estimation Issues. The random assignment design allows us to estimate unbiased impacts for sites with a specific characteristic by comparing the outcomes of program and control group members in those sites. For example, we obtained unbiased impacts for sites with center-based programs by estimating the regression models discussed above using program and control group members in those four locations. Similarly, we estimated impacts for early implementers using only program and control group families in those six sites. Sites were given equal weight in all analyses. We conducted statistical tests to gauge the statistical significance of the subgroup impacts as well as whether the impacts differed across subgroups (for example, whether impacts for center-based, home-based, and mixed-approach sites differed).

Interpretation of Estimates. The results from this analysis should be interpreted cautiously, for several interrelated reasons. First, there are only a small number of programs in each subgroup, so the estimates are imprecise. Second, program features were not randomly assigned to the research sites. Instead, as specified in the Head Start Program Performance Standards, the programs designed their services on the basis of their community needs and contexts. Accordingly, the configuration of services offered, the program structure, and the characteristics of families served varied across sites. Consequently, our results tell us about the effectiveness of specific program features *for programs that adopted those features, given their community contexts and eligible population.* The results do *not* tell us about how successful a particular program feature would have been if it had been implemented in another site, or how well a family in one type of program would have fared in another. We are comparing the outcomes of program and control group families *within* sites, not comparing families across sites. Thus, for example, our results inform us about the effectiveness of mixed-approach programs for the research sites that implemented this program approach. However, these results cannot necessarily be used to assess how the mixed approach would have succeeded in sites that chose to adopt home-based or center-based approaches, because of other differences in the characteristics of these sites.

These important qualifications can be further illustrated by noting that the characteristics of families differed by program approach (Table II.9). For example, compared to families in home-based and mixed-approach programs, families in center-based programs were much more likely to have been employed or in school at the time of program application, and to have older children. They were also less likely to be receiving welfare. Furthermore, community characteristics, as well as implementation levels, differed by program approach. Because of these important differences, our results do not provide strong evidence that one particular program approach is better than another. Instead, our analysis addresses the important policy question of whether programs that purposively select and provide a particular array of services to meet perceived needs can effectively improve various outcomes for program participants in their communities.

We did attempt to isolate the effects of particular program features from others using hierarchical linear modeling (HLM) techniques. This method examines the effects of a particular program feature on impacts (for example program approach), holding constant the effects of other site features (such as implementation level and the average characteristics of families served by the program). For key outcomes, we regressed the 17 site-specific impact estimates on site-specific measures. The results from these models, however, were not very informative, because with only 17 "observations," we could include only a small number of explanatory variables in the models. Consequently, we could not control adequately for important differences across sites and hence could not successfully isolate the effects of particular program features. Thus, we do not present results from the HLM models.

TABLE II.9

KEY FAMILY, PARENT, AND CHILD CHARACTERISTICS AT BASELINE, BY PROGRAM APPROACH

(Percentages)

Characteristic	Program Approach Center-Based	 Home-Based	 Mixed
Mother a Teenager at Birth of Focus Child	41	36	42
Mother's Education			
Less than grade 12	45	49	48
Grade 12 or earned a GED	29	28	29
Greater than grade 12	26	23	23
Race and Ethnicity			
White non-Hispanic	30	41	37
Black non-Hispanic	37	28	42
Hispanic	27	27	17
Received Welfare	26	39	37
Primary Occupation			
Employed	34	22	19
In school or training program	28	18	23
Neither	39	60	58
Living Arrangements			
With spouse	19	29	24
With other adults	43	30	48
Alone	38	41	28
Maternal Risk Index[a]			
0 or 1 (low risk)	21	17	18
2 or 3 (moderate risk)	57	56	54
4 or 5 (high risk)	23	27	29
Age of Focus Child			
Unborn	12	26	33
Less than 5 months	32	36	37
5 months or older	56	39	30

SOURCE: HSFIS application and enrollment forms.

[a] This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

Finally, we estimated program impacts for finer subgroups of sites by combining across the site categories discussed above. For example, we estimated impacts by combining the implementation and program approach categories. This analysis is similar in spirit to the HLM approach, because it helps to disentangle the effects of subgroups that were correlated with each other. While these results were sometimes unstable because of small sample sizes, they provided important information about the pattern of program impacts across the important subgroups defined by program approach and level of implementation. These analyses (discussed in Appendix D) provide assurance that certain program approaches were not responsible for the results by implementation status, and that the results by program approach were not driven by the particular levels of implementation in the program approach subgroups.

b. Child and Family Characteristics

Determining the extent to which Early Head Start programs benefit children and families with different personal characteristics has important policy implications both for the operation of Early Head Start and for the development of other programs designed to serve this population. Policymakers can use findings from this subgroup analysis to improve program services and target them appropriately. Even where equity considerations prevent targeting of services, subgroup impacts could provide insights into how the program generates large or small overall impacts.

We constructed the child and family subgroups for the analysis using HSFIS data. The variables were measured at baseline (that is, *prior* to random assignment), because variables pertaining to the post-random assignment period are outcomes (that is, they could have been affected by Early Head Start participation) and therefore cannot be used to define valid subgroups. We selected the subgroups in consultation with ACYF and the Early Head Start

Research Consortium to capture key variations in the program needs and experiences of families served by Early Head Start.

We examined the following subgroups (Table II.10 displays subgroup sample sizes):

- ***Mother's Age at Birth of Focus Child.*** It is likely that a number of developmental outcomes vary by the mother's age, as might the ease of supporting mothers in various aspects of parenting. About 39 percent of mothers were teenagers when the Early Head Start focus child was born (including those born after random assignment). We created a group of all teenagers (under 20 years of age) in order to have a subgroup sufficiently large for analysis.

- ***Mother's Education.*** Considerable research has shown mother's education to be a predictor of children's development and well-being. We created three subgroups (completion of less than 12th grade, completion of grade 12 or attainment of a GED, and education beyond high school). About half the mothers had not completed high school by the time they applied to Early Head Start, and about one-fourth were in each of the other groups.

- ***Race and Ethnicity.*** A little more than one-third of the program applicants were white non-Hispanic, about one-third were African American non-Hispanic, and one-quarter were Hispanic. (The "other" group is too small to constitute a subgroup.)

- ***Whether Mother Received AFDC/TANF Cash Assistance.*** As noted in Chapter I, Early Head Start began just as TANF was enacted. Issues related to public assistance and employment are of keen interest to policymakers, so it was important to examine the extent to which Early Head Start programs benefited families receiving such assistance (about 35 percent of mothers were receiving AFDC/TANF at the time they applied to their local Early Head Start program).

- ***Primary Occupation.*** Three subgroups were used to distinguish applicants who were employed, in school or training, or neither. About 50 percent were neither working nor in school, with about 25 percent employed and 25 percent in school.

- ***Living Arrangements.*** We created three categories: (1) lives with a spouse, (2) lives with other adults, and (3) lives alone. The sample is divided, with about 25, 39, and 36 percent in each of these groups, respectively.

- ***Age of the Focus Child.*** We created three subgroups based on the age of the child at random assignment: (1) unborn, (2) under 5 months, and (3) 5 to 12 months, with 25, 35, and 39 percent of the sample in each group, respectively.

- ***Gender of the Focus Child.*** About 50 percent of the sample children are boys and 50 percent girls.

- ***Birth Order of Focus Child.*** About 63 percent were first-born.

TABLE II.10

SUBGROUPS DEFINED BY FAMILY AND CHILD CHARACTERISTICS AT BASELINE

Subgroup	Sample in All Sites		Sample in Sites With at Least 10 Program Group Participants and 10 Controls in the Subgroup[a]		
	Sample Size	Percent of Families	Sample Size	Number of Sites	Number of Sites in 24-Month Bayley Sample
Parent and Family Characteristics					
Mother's Age at Birth of Focus Child					
Less than 20	1,142	39	1,116	16	15
20 or older	1,771	61	1,754	16	15
Missing	88				
Mother's Age at Birth of First Child					
Less than 19	1,247	42	1,247	17	14
19 or older	1,720	58	1,691	16	15
Missing	34				
Mother's Education					
Less than grade 12	1,375	48	1,375	17	16
Grade 12 or attained a GED	822	29	773	14	10
Greater than grade 12	682	24	664	15	8
Missing	122				
Race and Ethnicity[b]					
White Non-Hispanic	1,091	37	1,017	11	6
Black Non-Hispanic	1,014	35	952	10	7
Hispanic	693	24	643	8	6
Missing	68				
Welfare Receipt[c]					
Received welfare	842	35	769	13	7
Did not receive welfare	1,554	65	1,554	17	17
Missing	41				
Primary Occupation					
Employed	677	24	651	15	9
In school or training	630	22	564	12	6
Neither	1,590	55	1,590	17	15
Missing	104				
Primary Language					
English	2,265	79	2,265	17	16
Other	615	21	560	9	4
Missing	121				
Living Arrangements					
With spouse	752	25	657	11	8
With other adults	1,157	39	1,157	17	14
Alone	1,080	36	1,021	14	10
Missing	12				

TABLE II.10 *(continued)*

Subgroup	Sample in All Sites		Sample in Sites With at Least 10 Program Group Participants and 10 Controls in the Subgroup[a]		
	Sample Size	Percent of Families	Sample Size	Number of Sites	Number of Sites in 24-Month Bayley Sample
Presence of Adult Male in the Household					
Male present	1,153	39	1,145	16	13
Male not present	1,836	61	1,836	17	17
Missing	12				
Random Assignment Date					
Before 10/96	1,088	36	1,062	13	10
10/96 to 6/97	916	31	916	16	11
After 6/97	997	33	952	14	10
Missing	0				
Maternal Risk Index[d]					
0 or 1 (low risk)	483	18	336	8	5
2 or 3 (moderate risk)	1,478	55	1,478	17	16
4 or 5 (high risk)	713	27	665	14	8
Missing	327				
Focus Child Characteristics					
Age					
Unborn	761	25	678	12	8
Less than 5 months	1,063	35	1,051	16	14
5 months or older	1,177	39	1,172	16	14
Missing	0				
Gender					
Male	1,510	51	1,510	17	17
Female	1,448	49	1,448	17	16
Missing	43				
First Born					
Yes	1,858	63	1,858	17	17
No	1,112	37	1,097	15	14
Missing	31				
Sample Size	**3,001**				

SOURCE: HSFIS application and enrollment data.

[a] Data for the subgroup analysis pertain to sites that have at least 10 program group participants and 10 control group members in the subgroup.

[b] About 5 percent of cases (135 cases) were American Indian, Eskimo, Aleut, and Asian or Pacific Islander. Sample sizes for these groups were too small to support separate impact estimates for them.

[c] Data pertain to families with focus children who were born at baseline.

[d] This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

Because many of the family subgroups are correlated with each other, we constructed a maternal risk index to reduce the dimensionality of the subgroup analysis. We defined the index as the number of risk factors that the mother faced, including (1) being a teenage mother, (2) having no high school credential, (3) receiving public assistance, (4) not being employed or in school or training, and (5) being a single mother. We created three subgroups for the impact analysis: (1) those with 0 or 1 risk factor (low risk; 18 percent of mothers); (2) those with 2 or 3 factors (moderate risk; 55 percent of cases), and (3) those with 4 or 5 factors (high risk; 27 percent of cases).

Estimation Issues. Random assignment simplifies estimating impacts for subgroups defined by child and family characteristics measured at the time of application to Early Head Start. Differences in the mean outcomes between program and control group members in a particular subgroup provide unbiased estimates of the impact of Early Head Start for the subgroup. For example, we estimated impacts for teenage mothers by comparing the mean outcomes of teenage mothers in the program and control groups. Similarly, we estimated impacts for female focus children by comparing the outcomes of girls in the program and control groups. We used similar regression procedures, as discussed above, to estimate impacts per eligible applicant and per participant only. We conducted statistical tests to gauge the statistical significance of the subgroup impact estimates, and the difference in impacts across levels of a subgroup.

Because we weighted each site equally in the analysis, to avoid unstable results, we included sites in particular subgroup analyses only if their sample included at least 10 program group participants and 10 control group members in that subgroup. Most sites were included in each of the subgroup analyses, although this was not always the case (Table II.10). For example, for the full sample, only 8 sites had the requisite number of Hispanic families, only 12 had the requisite number of primary caregivers who lived with a spouse or partner, and only 11 had enough families with unborn focus children. Furthermore, fewer sites were included for outcomes constructed from data sources with lower response rates, such as the Bayley and video assessments. Thus, the subgroup results must be interpreted cautiously, because they are somewhat confounded with impacts by site.

c. Presentation of Subgroup Results

The results from the targeted analysis are presented in a similar way as the results from the global analysis. We present subgroup impact results per *participant* for the child, parenting, and family outcomes. Focusing on the impacts per participant in the subgroup analyses is particularly important because of some subgroup differences in participation rates (see Chapter III). For example, if participation rates were high in center-based programs and low in home-based programs (which is not the case), comparing impacts per *eligible applicant* would be misleading, because the impacts would be "diluted" more for the home-based programs. Thus, focusing on the impacts per participant facilitates the comparison of impacts across subgroups. As with the global analysis, however, we present impact results per *eligible applicant* for the service use outcomes. For all outcomes, we indicate not only whether impact estimates for each subgroup are statistically significant, but also whether the difference between impacts across levels of a subgroup are statistically significant.

We view the subgroup impact results by site characteristics as particularly important, and present these results with those from the global analysis in each of the chapters reporting impacts (on service use, child outcomes, parenting, and family outcomes). We present the results for the subgroups based on family and child characteristics together in Chapter VII. The emphasis we place on various subgroups in our presentation varies, depending on the outcome variable and our hypotheses about the extent and nature of expected program impacts.

3. Criteria for Identifying Program Effects

The global and targeted analyses generated impact estimates for a very large number of outcome measures and for many subgroups. In each analysis, we conducted formal statistical tests to determine whether program-control group differences exist for each outcome measure. However, an important challenge for the evaluation is to interpret the large number of impact estimates to assess whether, to what extent, and in which areas Early Head Start programs make a difference.

The initial guide we use to determine whether programs have had an impact on a particular outcome variable at this interim stage is the p-value associated with the t-statistic or chi-squared statistic for the null hypothesis of no program impact on that outcome variable. We adopt the convention of reporting as significant only those program-control differences that are statistically significant. So that we may examine patterns of effects, we include differences significant at $p<.05$ and $p<.01$, but we also note marginally significant findings, where $p<.10$, when they contribute to a consistent pattern of impacts across multiple outcomes. However, more stringent criteria than the p-values are needed to identify "true" program impacts, because significant test statistics are likely to occur by chance (even when impacts may not exist) because of the large number of outcomes and subgroups under investigation. For example, when testing program-control group differences for statistical significance at the 5 percent level, 1 out of 20 independent tests will be significant when in fact no real difference exists.

Thus, we apply several additional criteria to identify potential program impacts:

1. We examine the magnitude of the significant impact estimates to determine whether the differences are large enough to be policy relevant. To provide a common

benchmark that allows comparison across various findings that are based on different scales, we assess impacts in reference to effect size units. As noted earlier, the effect size is expressed as a percentage calculated by dividing the magnitude of the impact by the standard deviation of the outcome variable for the control group multiplied by 100.

2. We check that the sign and magnitude of the estimated impacts and effect sizes are similar for related outcome variables and subgroups.
3. We analyze subgroup impacts from the targeted analysis to examine whether impacts follow the pattern predicted.
4. We determine whether the sign and magnitude of the impact estimates are robust to the alternative sample definitions, model specifications, and estimation techniques discussed in this chapter.
5. We incorporate local research findings.

In sum, we identify program effects by examining the *pattern* of results rather than by focusing on isolated results. At this early stage in the evolution of Early Head Start programs, it is important to be able to see the range of potential impacts, at the same time using rigorous criteria for interpreting meaning across the outcome areas and various subgroups that are of greatest interest to the Head Start Bureau, other policymakers, and the hundreds of Early Head Start programs around the country.

III. EARLY HEAD START IMPACTS ON SERVICE RECEIPT

Early Head Start is a complex intervention that is challenging to implement. As a first step toward understanding impacts on children and families, we need to document program accomplishments and the services families received. Did the 17 research programs provide a fair test of the Early Head Start concept, or did the programs fail to deliver the key services to many families?

Evidence from the implementation study shows that, overall, the research programs succeeded in implementing Early Head Start services and delivered key services to most families who enrolled (Administration on Children, Youth and Families 2001b). As summarized in Chapter I, patterns of implementation varied among the 17 research programs. One-third did not reach full implementation by fall 1999, but most had fully implemented the program by fall 1999. The implementation study also showed that in the initial period following program enrollment, the research programs provided some child development/parenting services to nearly all families who enrolled, and provided intensive services to the majority. Section B below summarizes the nature and intensity of these services.

Control group families were prohibited from receiving Early Head Start services but were free to seek other similar services in their communities. Therefore, it is critical that we document the services they received and assess whether the Early Head Start programs increased the types, amount, or intensity of services that families received. If most control group families received similar services, and if these services were as intensive as the services that Early Head Start families received, we might find few significant impacts on child and family outcomes, even if the Early Head Start research programs were highly successful in achieving their desired outcomes.

Our analysis of program impacts on service receipt shows that even though many control group families received some similar services from other community sources during the initial period after random assignment, program families were much more likely to receive key services:

- Even though three-quarters of control families received some key services (home visits, center-based child care, case management, and/or group parenting activities) from other community sources during the first 16 months after enrollment, program families were significantly more likely to receive at least one of these key services (nearly all of them did).
- Early Head Start families were much more likely than control families to receive the core child development or parenting-focused services (home visits and/or center-based child care and child development services). In addition, Early Head Start families were more than twice as likely as control families to participate in parent education, parent-child, or parent support group activities.
- The Early Head Start programs increased the receipt of intensive child development/parenting services even more dramatically. During the first seven months after enrollment, for example, most Early Head Start families received home visits at least monthly, and nearly half received them at least weekly (an intensity of child development services generally regarded as necessary to produce child or parenting effects). In contrast, very few control families received monthly or weekly home visits. In home-based programs, the majority of Early Head Start families, but very few control families, received weekly home visits. During the first 16 months after enrollment, children who enrolled in center-based Early Head Start programs were in center-based care for almost twice as many hours as control children.
- The Early Head Start programs also increased families' receipt of case management and their use of services in the community, such as education and employment-related services and transportation assistance.
- Medicaid and State Children's Health Insurance Programs have made health care services widely accessible to low-income families, and nearly all program and control group families reported receiving basic health services.

This chapter presents our analyses of program impacts on families' service receipt. The first section briefly summarizes service receipt by program families, and the second section assesses Early Head Start impacts on service receipt during the first two follow-up periods (16 months, on average, after enrollment). The final section discusses the implications of these analyses for the analyses of impacts on children and families. The data sources for the analyses in this chapter include the parent services follow-up interviews completed an average of 7 and 16 months after random assignment and the Head Start Family Information System application and enrollment data which were described in Chapter II.

A. OVERVIEW OF THE LEVELS AND INTENSITY OF EARLY HEAD START SERVICES DURING THE FIRST 16 MONTHS

This chapter focuses on differences in service receipt by program and control group members. To set the context for examining these differences, this section briefly summarizes the levels and intensity of services received by Early Head Start program families during the first 16 months, on average, after enrollment. A detailed discussion of program participation and service use can be found in the *Pathways to Quality* implementation study report (Administration on Children, Youth and Families 2001b). At the local level, research-program partners have looked into the home visiting services in more detail. As seen in Box III.1, observational data provide an in-depth picture of home visiting that supplements the cross-site findings listed here.

1. Early Head Start Participation

- ***Nearly all families in the program group received some Early Head Start services.*** Ninety-one percent received more than minimal services (received more than one home visit, met with a case manager more than once, received at least two weeks of center-based child development/child care services, and/or participated in group parenting activities).[1] Most families (86 percent) received child development or parenting services during home visits or in program centers.

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[1] These families are considered program participants for purposes of estimating impacts per participant. A few families reported receiving just one home visit or one case management meeting. It is likely that this was a visit or meeting to complete the application process, not to provide services.

BOX III.1

AN INSIDE LOOK AT HOME VISITING

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Recent efficacy studies of home-visiting programs have produced mixed and modest results, and home visiting is being questioned as an effective mechanism for service delivery. However, the home is only a location for intervention services. Many recent evaluations of home-visiting programs have employed rigorous experimental designs but have failed to document the actual nature and content of home visits, the diversity of programs and populations being served, or a theory of *how* and *why* a program might work.

Iowa State University researchers have collaborated with Mid-Iowa Community Action, Inc. (MICA) to document the process and content of interventions delivered to 77 families through home visits. Here, to illustrate the notion that home visiting as a service delivery model is complex and not homogenous across families even within a single program, we profile two families receiving Early Head Start services.

Observational data describing the process and content of home visits were collected by research staff who accompanied interventionists to families' homes. These data were summarized to present the percentages of overall time spent on content areas (for example, child development topics, family topics) and in specific intervention arrangements (for example, facilitating parent-child interaction, providing information). These data were combined with program documentation of hours of home visiting received to calculate total numbers of hours, or dosage, of specific intervention strategies implemented with individual families.

Rita and Kandy (not their real names) are two young mothers who received home-visiting services from MICA's Early Head Start program; they are very much like many participants in the program. Rita and Kandy were (1) each parenting one child (both children were born in summer 1996); (2) had a high school diploma; and (3) lived in a small, rural community. Both women were single; however, Kandy lived with her son's father during part of this time. Despite these similarities, MICA found it necessary to provide very different Early Head Start services to these two families.

Both families received home visits from a child development specialist (CDS) and a family development specialist (FDS) overall, both families received similar numbers of home visits. However, Rita's family received far more child development services than did Kandy's. Rita's family received 113 home visits (160 hours); 65 of these (99 hours) were CDS visits. Rita's CDS visits focused on child-related content 51 percent of the time, translating into 51 total intervention hours. Rita's FDS visits focused on child-related content 23 percent of the time, accounting for an additional 14 hours of child-related intervention. The CDS spent 19 hours and the FDS spent 5 hours engaging Rita's son and supporting his interactions directly by teaching the child themselves, modeling interactions for Rita, or coaching Rita's interactions with her son. In contrast, Kandy's 109 visits were split almost evenly between CDS visits (55 visits and 68 hours) and FDS visits (54 visits and 61 hours). Kandy received 51 hours of child-related intervention, and interventionists spent 18 hours engaging Kandy's son directly.

Seemingly, greater emphasis on a specific content area or strategy should translate into more powerful intervention outcomes in the targeted area(s). However, systematic study of links between intervention activities, outcomes, and contexts is necessary to refine intervention services effectively and to guide policy recommendations adequately.

2. Home Visits

- ***Most families in the program group received at least one Early Head Start home visit.*** Across all research programs, most families (85 percent) reported receiving at least one Early Head Start home visit by the time of the second follow-up interview, and 75 percent reported receiving more than one. Receipt of home visits was highest among home-based programs (92 percent of families reported receiving at least one Early Head Start home visit, and 89 percent reported receiving more than one) and lowest among center-based programs (64 and 34 percent, respectively).

- ***Slightly more than half of families in home-based programs received weekly home visits.*** Among the home-based research programs, 57 percent of families, on average, reported receiving Early Head Start home visits at least weekly during the first follow-up period (seven months, on average), and 52 percent reported Early Head Start home visits at least weekly during the second follow-up period (nine months on average). These levels of receipt of weekly home visits are generally consistent with the experiences of other home visiting programs, which have found that, on average, they are able to complete about half the intended number of home visits, regardless of the planned frequency of home visits (Gomby 1999).

- ***Home visits almost always included child development activities.*** Nearly all families who reported receiving Early Head Start home visits reported receiving child development services during those visits.

- ***Home visits typically lasted at least an hour.*** Most parents who received Early Head Start home visits reported that the typical visit lasted between one and two hours.

- ***Receipt of Early Head Start home visits remained high throughout the first two follow-up periods but declined modestly in the second period as some families left the program.***[2] On average, 70 percent of families reported receiving more than one Early Head Start home visit by the time of the first follow-up interview. The level of reported home visit receipt declined between the first and second follow-up interviews (to an average of 58 percent of families) as some families left the program.

3. Case Management

- ***Home visits and case management services overlapped substantially.*** The receipt and frequency of case management mirrored the receipt and frequency of home visits. Most program families reported receiving both home visits and case management (71 percent in the first follow-up period and 56 percent in the second follow-up period). More than 90 percent of these families reported that the person they met with for case management was the same person who visited them at home.

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[2] Program directors reported that approximately one-fourth of the program group members in the research sample left the program within the first year after enrolling. They left because they moved out of the program area, asked to be removed from the program rolls, or were terminated because of poor attendance or lack of cooperation with program requirements.

4. Group Parenting Activities

- ***Participation in group parenting activities was lower than participation in other key services.*** Overall, slightly more than half of families reported that they had attended an Early Head Start group parenting activity by the time of the second followup.

5. Child Care and Center-Based Child Development Services

- ***Levels of child care use by program families were high across all three program types.*** Two-thirds of children had received some child care services by the time of the first followup. Nearly 80 percent had by the time of the second.

- ***Program families relied on a wide range of providers for their primary child care arrangement (the arrangement used for the most hours during the follow-up period).*** Twenty percent of all program families relied primarily on an Early Head Start center, and 14 percent relied on other child care centers. Another one-third of families relied on a relative as their primary child care provider, usually grandparents or great-grandparents. Twelve percent of families used a nonrelative caregiver as their primary arrangement.

- ***The proportion of program families using center-based child care increased over time as children got older.*** One-third of all program children received care in child care centers during the first follow-up period. By the time of the second followup, the percentage of children who had ever been enrolled in center-based care increased to 43 percent.

- ***Approximately one-fourth of program families received center-based Early Head Start care.*** On average, 22 percent of program children received Early Head Start center-based child development services during the first follow-up period. By the time of the second followup, 25 percent had received Early Head Start center-based child development services.

- ***The use of multiple child care arrangements was common.*** On average, children received child care in two arrangements during the first 15 months after enrollment.[3] One-third of program children received care in multiple arrangements concurrently.

- ***Many program children received intensive child care services.*** One-third of program children were in child care for an average of 20 hours per week or more during the first 15 months after enrollment. Not all children who received child care were in care during the entire follow-up period, but more than half of program children received child care for at least 60 percent of the 15-month follow-up period.

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[3] Some child care measures are based on a 15-month timeline of monthly child care indicators and pertain to the first 15 months after random assignment. Other child care variables are more general and apply to the full follow-up period, which was 16 months long on average.

6. Services for Children with Disabilities

- ***By the time of the second followup, five percent of program families reported that their child had an identified disability.***[4] The proportion of children whose parents reported that a disability had been identified ranged from 0 to 13 percent across programs.

- ***The percentage of families who reported that their child had received early intervention services was slightly lower.*** On average, three percent of families reported that they had received early intervention services. Across programs, the receipt of early intervention services ranged from zero to eight percent.

7. Health Services

- ***All children had received some health services by the second followup.*** Nearly all children had received some immunizations by the time of the second followup (97 percent of all program children). More than 90 percent had visited a doctor.

- ***Nearly all families (96 percent) had received some health services (besides those they obtained for the focus child) by the time of the second followup.*** The proportion of families who received any health services ranged from 85 to 100 percent across programs.

- ***By the time of the second followup, when children were 20 months old on average, few children (11 percent) had visited a dentist.***

- ***At least one family member in nearly two-thirds of program families had visited an emergency room by the second followup.*** Many program children (42 percent) had visited an emergency room by the time of the second followup.

- ***By the time of the second followup, 17 percent of program families had received some mental health services,*** including 16 percent who had received treatment for an emotional or mental health problem, and 3 percent who had received drug or alcohol treatment.

8. Other Family Development Services

- ***Most primary caregivers (83 percent) reported having received education-related services by the time of the second followup.*** Two-thirds of primary caregivers reported having talked to a case manager about education services, and slightly more than half reported having attended school or a job training program.

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[4] The revised Head Start Program Performance Standards specify that at least 10 percent of programs' caseloads must consist of children with identified disabilities. According to reports of program staff at each site, by summer 2000 (when most children had reached age 3), 13 percent of children, on average, had been identified as eligible for early intervention services (4 to 30 percent across programs).

- ***Two-thirds of program families reported having received some employment-related services by the time of the second followup.*** Twenty-two percent of families reported having received job search assistance by the second followup, and 61 percent reported having talked to a case manager about finding a job or job training.

- ***Many families received other important support services.*** Half of program families had received housing assistance (public housing, rent subsidy, help finding housing, and/or energy assistance) by the time of the second followup. Nearly 30 percent of program families had received transportation assistance.

9. Families' Engagement in Early Head Start Services

- ***On average, program staff judged that slightly more than one-third of the research families became highly involved in program services.*** The extent to which program staff rated families as highly involved, however, varied substantially across the 16 sites that provided ratings, ranging from 20 to 74 percent. The staffs of three programs reported that at least half the research families enrolled in their program were highly involved.

10. Fathers' Receipt of Early Head Start Services

Although the vast majority of respondents to the parent interviews were mothers, the Early Head Start research also collected information from fathers about their receipt of Early Head Start services when their children were approximately 24 months old. Box III.2 on the following page presents a picture of the range of program activities and services that the fathers of Early Head Start children participated in. Future reports will provide even greater details on Early Head Start fathers and their program participation.

B. EARLY HEAD START IMPACTS ON SERVICE RECEIPT

Although control group families could not receive Early Head Start services, they were free to seek similar services in their community. Thus, for understanding program impacts on child

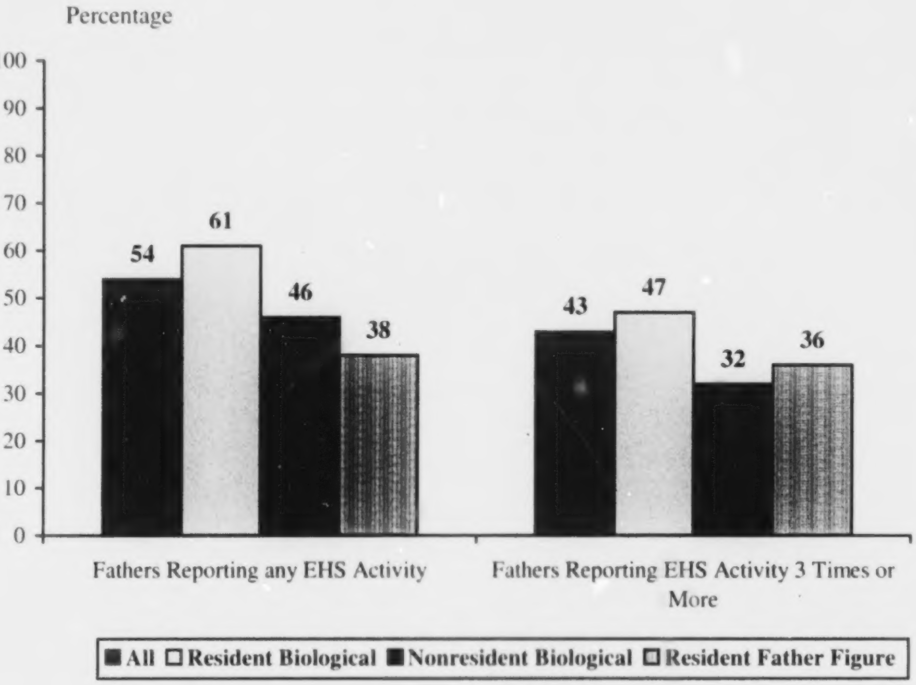
BOX III.2: FATHER INVOLVEMENT IN EARLY HEAD START PROGRAM ACTIVITIES

More than half of the Early Head Start fathers/father figures interviewed participated in at least one of the seven Early Head Start program activities we asked them about.[1] Fourteen percent of the fathers reported participating in three or more types of activities, and 40 percent participated in one or two types of activities. As expected, resident biological fathers were more likely than nonresident biological fathers and resident father figures to participate frequently in Early Head Start program activities (see figure below).

Twenty percent of the fathers interviewed reported that they participated in home visits more than once a month. As expected, resident biological fathers participated in home visits more often than nonresident biological fathers (26 percent versus 8 percent). Nine percent of the resident father figures participated in home visits, similar to the participation rates of the nonresident biological fathers.

Almost one-third of fathers dropped off or picked up their child at an Early Head Start center one or more times. Twenty-one percent of fathers reported that they dropped off or picked up their child from an Early Head Start child development center three times or more in the past month. Sixteen percent reported that they dropped off or picked up their child 10 times or more.[2]

Rates of father participation in the other program activities were lower, ranging from two percent to eight percent of fathers who participated three or more times in the past six months.



Source: Father interviews conducted when the children were approximately 24 months old.

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[1] The seven types of activities we asked about include: Early Head Start home visits, dropping off/picking up child at an Early Head Start center, attending Early Head Start parenting classes or events, attending Early Head Start parent-child activities, attending Early Head Start meetings or events just for fathers, attending an Early Head Start Policy Council or governing board meetings, and volunteering to help at the Early Head Start program. The 12 father interview study program sites included all four center-based programs, five of the home-based programs, and three mixed approach programs. None of the fathers in the home-based programs had the opportunity to pick up or drop off their children from an Early Head Start center. Fathers in the center-based and mixed programs had fewer opportunities to participate in home visits than fathers in the home-based programs.

[2] Ten times or more is equivalent to 25 percent of the time if the child attended 20 days per month and needed to be dropped off and picked up 40 times.

and family outcomes, it is important to examine the differences in service receipt[5] between program and control families (in other words, the program impacts on service receipt). The following subsections describe the global impacts of the Early Head Start programs on service receipt and then summarize the key variations in these impacts among key subgroups of programs. To illustrate the complexity of the task programs have in meeting the often diverse needs of their families, the local research report in Box III.3 shows the importance of flexible programming.

1. Global Differences in Receipt of Services

Our analyses show that many control families received services similar to those provided by Early Head Start. Nevertheless, program families were much more likely than control families to receive these services. The Early Head Start program impacts on receipt of services persisted through the first two follow-up periods.

a. Impacts on Overall Service Receipt

Early Head Start program families were significantly more likely than control families to receive any key services (home visits, case management, center-based child care/child development services, and group parenting activities) by the time of the second followup (95 compared with 75 percent) (Figure III.1). The impact on receipt of key services was largest during the first follow-up period (31 percentage points, not shown) and then declined to 20

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[5] In the past, some evaluation researchers have not measured services received by control group members or examined differences in services received by program and control group members. However, in an era when communities often have substantial services other than those offered by the intervention being evaluated, measuring services received by control group members and assessing the significance of the differences in service receipt between program and control group members (in other words, impacts on services use) is critical for understanding program effects on children and families.

BOX III.3

DIVERSITY OF EARLY HEAD START FAMILIES AND PROGRAM SERVICES

Michaela Farber, Shavaun Wall, and Harriet Liebow
The Catholic University of America

To understand how United Cerebral Palsy Early Head Start promotes child development and self-sufficiency in families struggling with poverty in Northern Virginia, The Catholic University of America research partners profiled the needs and program services of diverse families. To meet the unique needs of the 75 families served, Early Head Start tailored its array of program services to their demographic profile, birth (immigrant or U.S.-born), and occupational status (military or civilian). Early Head Start served 45 percent immigrant and 55 percent U.S.-born families. The U.S.-born comprised 35 percent military and 20 percent civilian families. To meet the needs of children in these families, Early Head Start developed a flexible mixture of child-focused services, including center-based and family child care and home visiting.

The immigrant families were in their late 20s, married, and more concerned with obtaining basic resources than civilian or military families. To meet their basic needs, Early Head Start sought to mobilize resources in public, faith-based, and voluntary sectors of the community. In addition to poverty, immigrants faced three barriers to economic self-sufficiency: (1) having inadequate English-speaking skills, (2) not completing a high school education, and (3) living in the United States less than five years. To counter these barriers, Early Head Start facilitated referrals to community education.

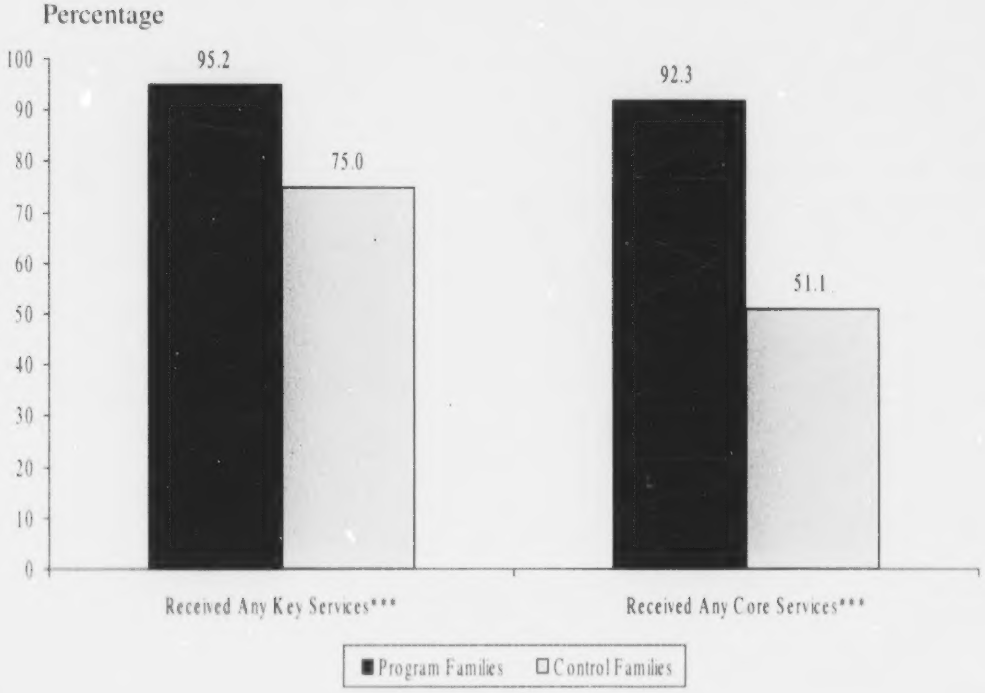
Three-quarters of the immigrant families were of Hispanic origin, most from Central America, but some from South America and Mexico. The rest were from West Africa, the Caribbean, Pakistan, the Philippines, Vietnam, and Bosnia. To directly serve them, Early Head Start hired bilingual staff. To identify and help remedy the linguistic gaps in the community, Early Head Start staff also participated in community forums. As a result of EHS investment in community collaboration, many immigrants were able to enroll in English classes by showing proof of their participation in Early Head Start.

U.S.-born military and civilian families were younger than immigrants. Military families were more likely to be married, with some college education. Civilian families were the youngest, least likely to be married, and most likely to have a high school education. Although U.S.-born families had more resources than immigrants, they struggled with lack of economic self-sufficiency, family problems, and health care. Civilian families faced the pressing needs of very young families with inadequate health care. Military families faced stresses such as deployment or family separations. To address the needs of young families, Early Head Start integrated Fairfax County's new Nurturing Program into its parent education program. Through community collaboration, Early Head Start staff facilitated a countywide shift in health care for low-income families from a lottery system to universal availability. Early Head Start also established child care in a child development center at a nearby army post and participated in the Special Needs Review Team at the center. To facilitate access to needed mental health and family services, Early Head Start staff collaborated with the military's Family Advocacy, Exceptional Family Member, and New Parent Support Group programs and helped families directly access community services. In addition, Early Head Start staff worked closely with the county's early intervention services to promptly identify and provide support to families of infants and toddlers with special needs.

In conclusion, knowledge of family birth status, occupational status, and demographic needs proved useful in designing and implementing Early Head Start individualized, comprehensive, and culturally sensitive services.

FIGURE III.1

IMPACTS ON RECEIPT OF ANY KEY SERVICES AND CORE CHILD DEVELOPMENT SERVICES BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Key services include at least one home visit, center-based child care, at least one case management meeting, and/or participation in a group parenting activity. Core services include at least one home visit and/or center-based child care.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

percentage points as more control families began receiving some services during the second follow-up period.

The Early Head Start research programs' impact on receipt of core child development/parenting services was much larger. Nearly all program families (92 percent) had received core child development/parenting services—home visits and/or center-based child care—while only 51 percent of control families had done so by the time of the second follow-up interview.

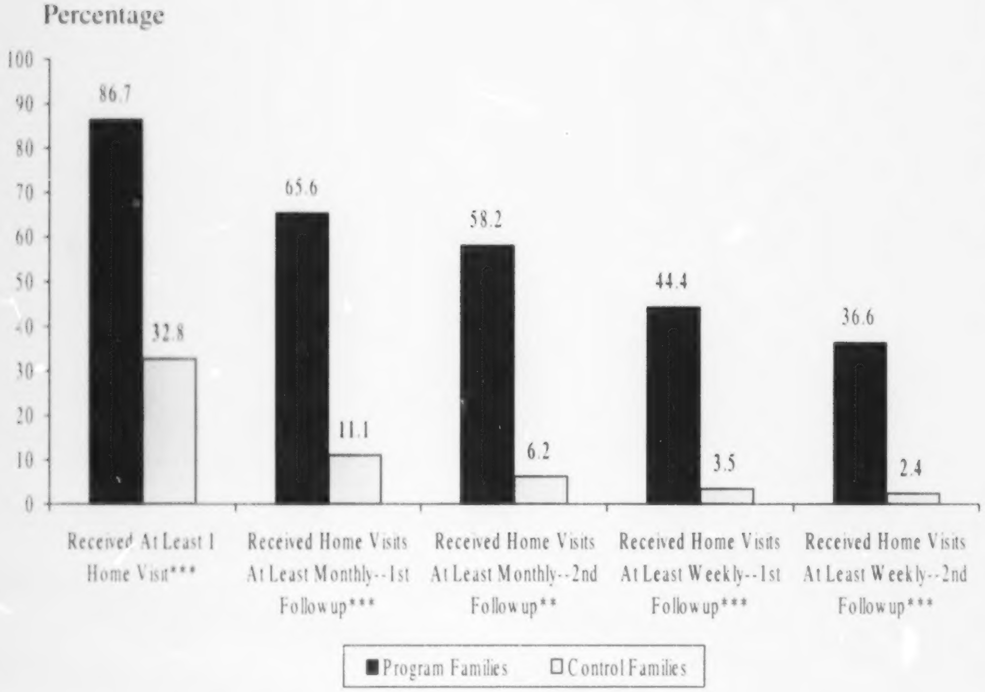
b. Impacts on Receipt of Home Visits

All Early Head Start programs are expected to visit families at home on a regular basis. Home-based programs are expected to visit families weekly, and center-based programs must visit families at home at least twice a year (though many do so more often). The Early Head Start research programs had their largest impacts on receipt of home visits. By the time of the second followup, substantially more program than control families had received at least one home visit (87 compared with 33 percent, on average) (Figure III.2). Not only were program families much more likely to have received any home visits by the time of the second followup, they were also much more likely to have received weekly or monthly home visits. Very few control families (four and two percent in the first and second follow-up periods, respectively) received home visits weekly, while more than one-third of program families received them weekly (Figure III.2). A few more control families received home visits at least monthly (11 and 6 percent, respectively), while nearly two-thirds of program families received home visits at least monthly.

Nearly all the families in both groups who received home visits reported that they received child development services during the visits. Thus, the Early Head Start impacts on receipt of home visits largely reflect impacts on receipt of child development services during home visits.

FIGURE III.2

IMPACTS ON HOME VISIT RECEIPT BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

c. Impacts on Receipt of Case Management

Among the key services provided by the Early Head Start programs, case management was the one that control families were most likely to receive from other sources in their communities. Nevertheless, program families were significantly more likely than control families to have received case management by the time of the second follow-up interview (85 percent met with a case manager at least once, compared with 50 percent of control families) (Figure III.3).

Program impacts on the receipt of frequent case management were large and similar to the impacts on receipt of frequent home visits, which reflects the substantial overlap between home visits and case management services (Administration on Children, Youth and Families 2001b). As was the case for home visits, only a small proportion of control families met with a case manager at least weekly, while more than one-third of program families did so (Figure III.3).

The program impacts on receipt of case management at least monthly were even more dramatic. During the first follow-up period, for example, 68 percent of program families met with a case manager at least monthly, compared with 18 percent of control families (Figure III.3).

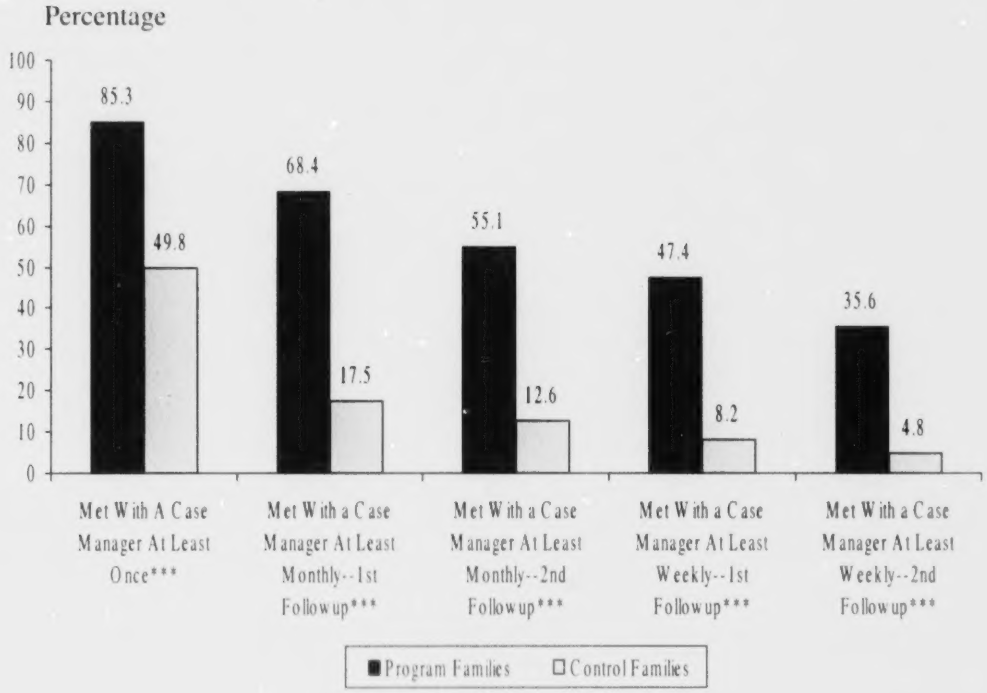
d. Impacts on Receipt of Parenting Information Services and Group Parenting Activities

The Early Head Start programs substantially increased the likelihood that families received parenting information during home visits or group parenting activities. Nearly all program families (93 percent), compared with 56 percent of control families, reported receiving any parenting information services by the time of the second followup (Figure III.4).

Although the Early Head Start programs found it very challenging to achieve high participation levels in group parenting activities (parenting classes, parent-child socialization activities, or parent support groups), they substantially increased program families' participation

FIGURE III.3

IMPACTS ON CASE MANAGEMENT RECEIPT BY THE SECOND FOLLOWUP



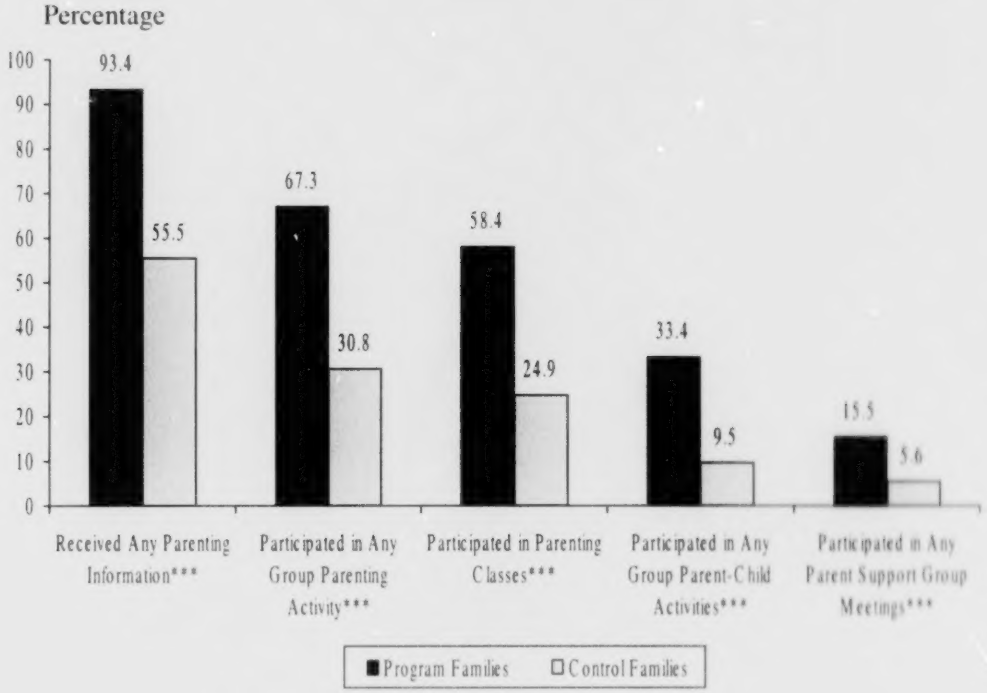
Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE III.4

IMPACTS ON RECEIPT OF PARENTING SERVICES BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Group parenting activities include parenting classes or events, group parent-child socialization activities, and parent support group meetings.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

relative to control families' participation in similar activities in the community. Two-thirds of program families, compared with just under one-third of control families, had participated in a group parenting activity by the time of the second followup (Figure III.4).

Among the group activities we examined, the Early Head Start programs increased participation in parenting classes the most (Figure III.4). By the time of the second followup, approximately half the program families, compared to only one-fourth of control families, reported having participated in parenting classes.

The impact of the programs on participation in parent-child group socialization activities was also substantial. One-third of program families had participated in group activities for parents and children by the time of the second followup, compared with only 10 percent of control families (Figure III.4).

e. Impacts on Child Care and Center-Based Child Development Services

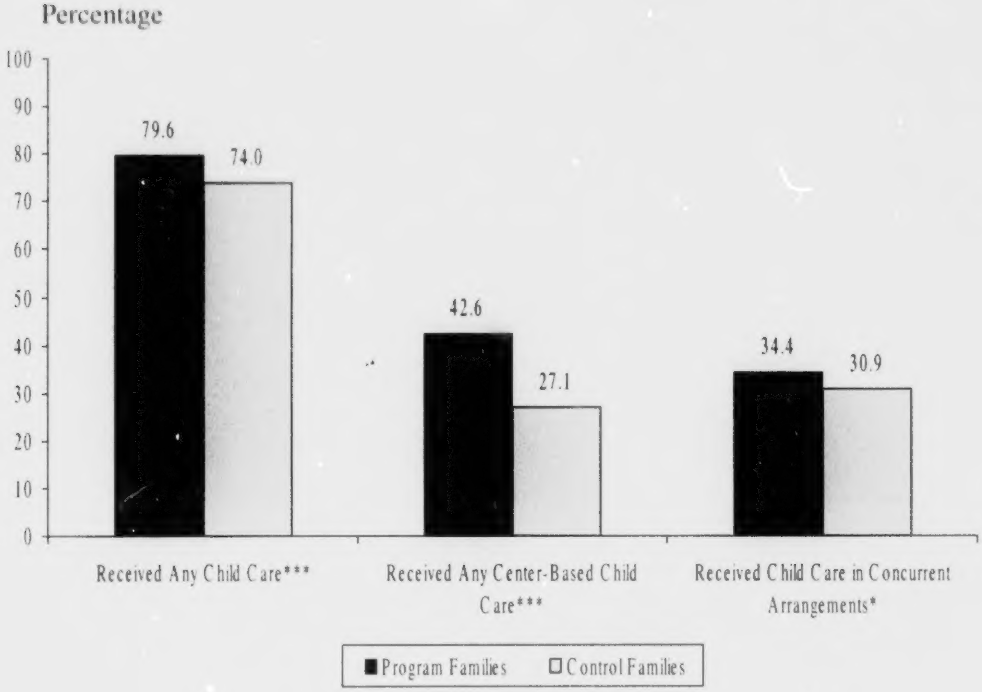
The Early Head Start programs significantly increased families' use of child care. Most families in both the program and control groups had used some child care for the focus children by the time of the second followup, but program children were significantly more likely than control children to have received some child care—80 compared with 74 percent (Figure III.5).

The programs increased families' use of center-based child care/child development services more dramatically. By the time of the second followup, 43 percent of program families, compared with 27 percent of control families had used some center-based child care for their focus child (Figure III.5).

Not only did the Early Head Start programs increase the percentage of families using any child care, they also increased the amount of child care that children received. During the 15 months after random assignment, program children received significantly more hours per week

FIGURE III.5

IMPACTS ON USE OF CHILD CARE SERVICES FOR FOCUS CHILD BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

of child care than control children (16.3 compared with 12.9 hours per week, on average) (Figure III.6). Similarly, the programs almost doubled the average hours per week of center-based care that children received (from 3.6 to 7.1 hours per week).

Program families were significantly more likely than control families to use concurrent child care arrangements (more than one child care arrangement at the same time) (Figure III.5). Program families may have had a greater need for multiple arrangements to cover all the hours during which they needed child care, because they used significantly more center-based care than control families, and centers are less likely than some other providers, such as relatives or friends, to provide care during evenings or weekends.

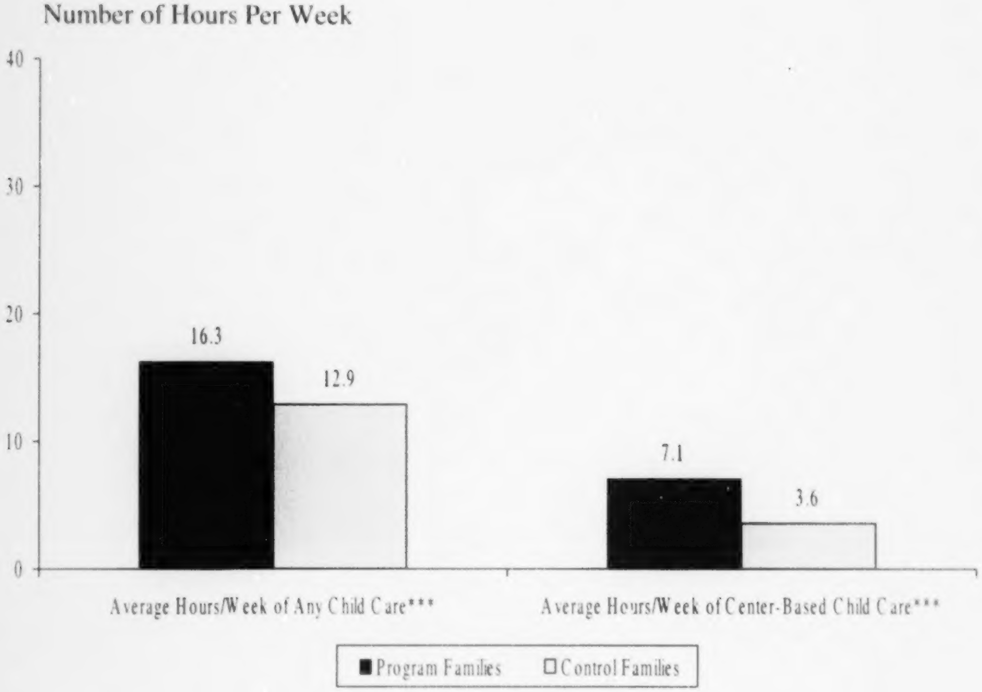
Program families paid significantly less money out of pocket for child care, on average, than control families ($3.34 less per week through the 15th month after random assignment, almost a 40 percent reduction in average out-of-pocket costs) (not shown). Some of the Early Head Start programs provided child care to some or all families free of charge. Other Early Head Start programs did not provide child care directly but helped some families arrange care with other providers and obtain child care subsidies to pay some or all of the costs of those arrangements. The experience of Project EAGLE in Kansas City illustrates program-community partnership strategies for helping families access child care (Box III.4).

f. Impacts on Receipt of Services for Children with Disabilities

The Early Head Start programs did not significantly increase the percentage of children with identified disabilities, but they did increase the percentage receiving early intervention services. The percentage with identified disabilities (as reported by parents) was low for both program and control children (four and three percent, respectively) through the second follow-up period (Figure III.7).

FIGURE III.6

IMPACTS ON HOURS OF CHILD CARE USE FOR FOCUS CHILD BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All means are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

BOX III.4

CHILD CARE PARTNERSHIPS

Martha D. Staker
Project EAGLE Early Head Start

Early Head Start programs are charged with developing comprehensive initiatives to support infants, toddlers, pregnant women, and their families. How they do this is up to them as long as the program meets or exceeds the Head Start Program Performance Standards. This flexibility allows Early Head Start sites to select program options and design services that respond to community and individual family needs.

However, most Early Head Start programs can enroll only a fraction of those eligible for the program. If Early Head Start programs partnered with existing agencies to support families, they could share resources and strengthen systems. Early Head Start could affect more children and families by purchasing services from other agencies that serve children, pregnant women, and families and by anchoring the partnership through training and joint case management efforts.

Project EAGLE Early Head Start of the University of Kansas Medical Center does this. Project EAGLE decided to invest in the community by purchasing developmentally appropriate child care from 25 existing centers and family child care homes. Over three years, Project EAGLE paid the tuition and fees for 55 child care providers from these sites to attend the local community college and work on their Child Development Associate (CDA) credential. Project EAGLE purchased textbooks, gave stipends to the child care providers who needed child care for their own children while they were in class, and awarded bonuses when providers completed nine college credits. Three interagency agreements support the partnership. These agreements are with (1) the community college to deliver three college courses (each three credits) that would meet the requirements of the Infant-Toddler CDA credential, (2) each child care provider asking them to commit to the class schedule and assignments, and (3) each center or home that reflects the administrator's support for the child care providers' continuing education and for the center's compliance with the performance standards. This last agreement also allows Early Head Start staff to visit the child care site unannounced and provide weekly or biweekly reflective supervision and support.

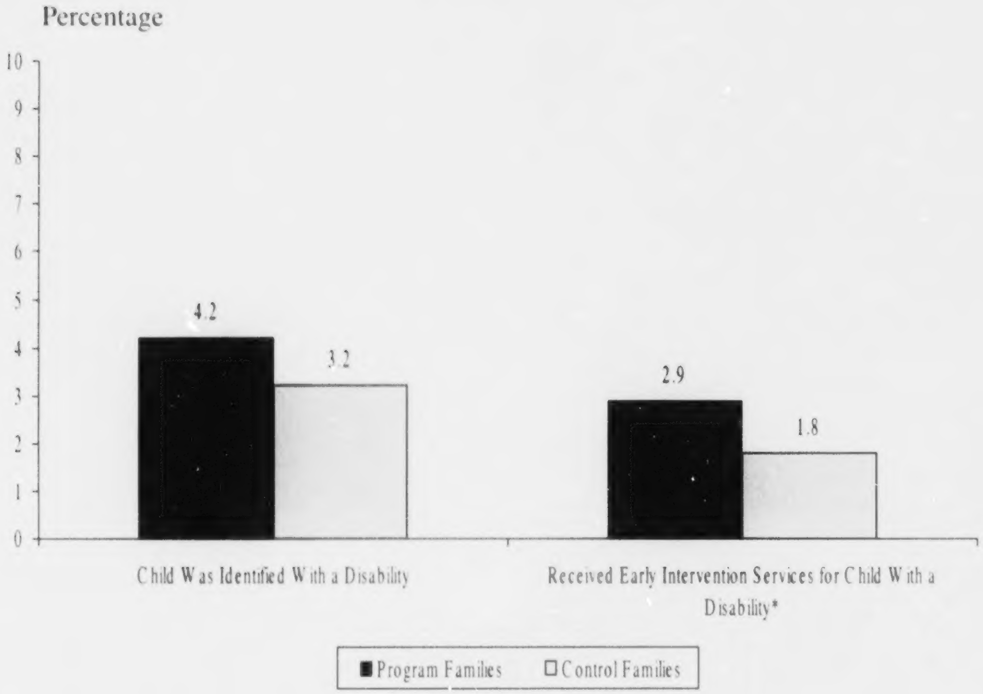
With this approach, every stakeholder benefits:

- ***Child Care Centers/Homes.*** Early Head Start pays the centers/homes their full tuition rates, staff further their education, and centers adopt and reflect the Head Start Program Performance Standards.
- ***Child Care Providers.*** Providers enhance their education and receive ongoing peer support; shared Individualized Family Support Plans (IFSPs) guide the provider's understanding of each child's strengths and needs.
- ***Families.*** Parents learn how to identify and choose quality child care, access quality child care, and advocate for their child through the development of one coordinated IFSP.
- ***Early Head Start Programs.*** Sites have flexibility in establishing program options and services that meet individual family needs. They ensure that families have access to quality infant-toddler care on a flexible schedule, promote shared responsibility and accountability, and leverage funds. They strengthen the child care system for all children in the community.

This approach contains challenges. It takes time for centers and homes to meet the Head Start Performance Standards. Money is often needed to upgrade facilities, and monitoring home providers is a difficult task. However, Project EAGLE is making a positive impact on the community. Last year, it arranged child care for 350 infants/toddlers in addition to the 200 it is funded to serve. Partnerships create systems change, and the whole community benefits.

FIGURE III.7

IMPACTS ON RECEIPT OF EARLY INTERVENTION SERVICES FOR FOCUS CHILD BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All means are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

The percentage of children who parents reported as receiving early intervention services was also low for both program and control children, but program children were significantly more likely than control children to have received disability services by the time of the second followup (three percent of program children, compared with two percent of control children) (Figure III.7).

g. Impacts on Child Health Services and Child Health Status

Nearly all children in both the program and the control groups received some health services, which reflects the accessibility to health services afforded by Medicaid and State Children's Health Insurance Programs. Few impacts on children's receipt of health services or their intensity were significant during either follow-up period (Table III.1). The few impacts on health services that were significant during the first follow-up period (the impacts on immunizations, hearing testing, and any health services) were small and did not persist through the second follow-up period (not shown).

By the time of the second followup, program children had visited a doctor for treatment of illness significantly more often than control children (four compared with three visits, on average) (Table III.1). Program families may have gained better access to health care for their children than control families, or they were more likely to take their children to a doctor when they were ill. Alternatively, program children may have become ill more often than control children and needed more frequent treatment.

Parents' reports of the health status of their children at 14 months of age suggest that program children were not as healthy as control children at that age (Table III.1). The impacts of programs on parents' reports of their children's health status were largest among center-based programs, where the impacts on use of center-based child care were the largest. Early Head Start

TABLE III.1

IMPACTS ON CHILD HEALTH CARE OUTCOMES DURING THE FIRST 16 MONTHS

Outcome	Program Group	Control Group	Estimated Impact per Eligible Applicant[a]
Percentage of Focus Children Who Visited a Doctor:			
For any reason	92.4	92.9	-0.5
For a check-up	87.6	87.9	-0.3
For treatment of an acute or chronic illness	70.9	69.8	1.2
Average Number of Doctor Visits:	4.2	4.1	0.2
For checkups			
For treatment of an acute or chronic illness	4.0	3.4	0.6**
Percentage Who Had Sufficient Well-Child Doctor Visits During Their:			
First year	77.0	74.8	2.2
Second year	74.1	72.5	1.7
Percentage of Focus Children Who Visited An Emergency Room	42.0	39.8	2.6
Average Number Of Emergency Room Visits:	0.9	1.0	-0.0
For any reason			
For treatment of accident/injury	0.1	0.1	-0.0
Average Number of Hospitalizations During Child's:			
First year	0.4	0.3	0.1
Second year	0.2	0.2	0.0
Average Number of Nights Hospitalized During Child's:			
First year	1.4	1.2	0.2
Second year	0.5	0.8	-0.3
Average Percentage of Focus Children Who:			
Visited A Dentist	10.6	9.8	0.8
Received Any Immunizations	97.4	96.7	0.7

TABLE III.1 *(continued)*

Outcome	Program Group	Control Group	Estimated Impact per Eligible Applicant[a]
Average Percentage of Children Who Received:			
Any screening test	54.9	52.9	2.0
A hearing testing	30.1	28.8	1.2
A lead test	21.8	23.4	-1.6
Average Percentage of Children Who Received Any Health Services	99.5	99.4	0.1
Average Parent-Reported Health Status Of Child[b]			
When child was 14 months old	3.6	3.7	-0.1***
When child was 24 months old	3.8	3.9	-0.1
Percentage Who Were Reported By Parents To Be In Fair Or Poor Health			
When child was 14 months old	18.7	16.0	2.7*
When child was 24 months old	12.2	12.9	-0.8
Sample Size	**1,139**	**1,097**	**2,236**

SOURCE: Parent services follow-up interviews conducted approximately 7 and 16 months after random assignment and parent interviews conducted when children were 2 years old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b] Primary caregivers rated their children's health status on a scale of 1 (poor) to 5 (excellent).

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

children in those sites were probably exposed to more contagious illnesses in child care centers and became ill more often than control group children in those sites.

A closer look at how health services are provided at the local level suggests both the complexity of delivering these services and program strategies that can be effective, particularly with families who have no other access. These are described in Box III.5. In Box III.6 we see a special local focus on nutrition and health status.

h. Impacts on Receipt of Family Health and Other Family Development Services

Because almost all program and control families received some health services, none of the estimated program impacts on receipt of family health services was significant (Table III.2). The Early Head Start programs also did not have a significant impact on families' receipt of mental health services (Table III.2).

The estimated program impact on primary caregivers' self-reported overall health status was negative and significant when their children were 14 months of age. The primary caregivers of program children may not have been as healthy as the primary caregivers of control children, or may have been more aware of health issues and more likely to take them into account when rating their overall health status. The early impact on primary caregivers' self-reported health status, however, did not persist when children were 24 months of age (Table III.2).

An important focus of Early Head Start services was families' self-sufficiency goals and their efforts and progress toward them. The programs substantially increased primary caregivers' receipt of education-related services (school or job training program participation and/or discussion of education topics with a case manager): 83 percent of program families compared with 51 percent of control families received education-related services during the first

BOX III.5

VENICE FAMILY CLINIC CHILDREN FIRST PROGRAM HEALTH SERVICES PROVE SUCCESSFUL

JoEllen Tullis and Karen Lamp
Venice Family Clinic Children First Early Head Start

The mission of the Venice Family Clinic (VFC) is to provide affordable, accessible, and compassionate comprehensive primary health care for people with no other access to such care. One of the clinic's guiding principles is that clients are partners in their health care and that health care happens in the context of the cultural, social, physical, emotional, and economic needs of the client. As a result of this commitment, VFC sought and received funds to operate the Children First Early Head Start program.

The program's mission is to optimize the quality of life for children prenatal to age 3 by strengthening families and communities. To achieve this, children and families must be healthy. The first steps toward reaching the desired outcome of healthy children and families are to help families access insurance and to connect them to a medical home. Proven consequences of being uninsured include limited and delayed access to needed services, poorer physical and mental health, premature death, and a diminished capacity to contribute to one's family and community. Children First Early Head Start helps all its families determine whether any family members are eligible for any insurance programs. VFC becomes the medical home for families that are not insurable. At VFC, families receive free quality primary health care and can access a variety of services. These services include health education, developmental screening, diagnostic tests, chronic care treatment, medication, nutrition counseling, ophthalmology/optometry (including free glasses), case management, and social work. They also include mental health services, which provide crisis, individual, and family counseling, and group support and education programs (for example, parenting, prenatal, battered women). The clinic also has a warm line to answer basic child development concerns and questions about parent/child classes. Because Children First Early Head Start home visitors understand the scope of services at the clinic and (with family permission) have access to their physician and multidisciplinary case conferences, the families are more likely to take advantage of these services, seek care in a timely manner, and adhere to treatment plans.

Having Early Head Start as part of the clinic has led to operational changes at the clinic that provide advantages to all patients. Children First Early Head Start has enhanced the ability of VFC staff to (1) understand the importance of the early years and how those years affect an individual in the future, (2) see patients in the context of their families rather than individuals in a state of disease, and (3) look beyond the medical model and embrace the services of social work. The relationship has also led VFC to create a literacy program for pediatric patients, to strengthen the Health Education Department with its focus on primary prevention and community outreach, and to infuse resources into behavioral modification/risk reduction and identification of victims of domestic violence. All physicians screen for domestic violence, and the clinic now has a domestic violence specialist, an advocate to help victims through the court system, and an ongoing support group.

Substantial quantitative and qualitative data show that this comprehensive approach to health care makes a difference. Compared to county averages, Children First Early Head Start families fare much better in rates for both number of uninsured and incomplete immunizations.

"He who has health, has hope; and he who has hope, has everything." --Arabian proverb

BOX III.6

DIET QUALITY BY FOOD INTAKE AND MEALS IN LIMITED-INCOME MOTHER-INFANT PAIRS IN JACKSON, MICHIGAN

Seung-yeon Lee, Sharon Hoerr, and Rachel Schiffman
Michigan State University

Low-income families are at high risk for poor nutritional status and health. Low socioeconomic status (SES) groups show higher incidences than high SES groups of premature and low-birthweight babies, growth and developmental retardation in infants/toddlers, and chronic diseases such as heart disease, stroke, and some cancers. Poor diet is a factor in these conditions that is sometimes overlooked by child development specialists. Furthermore, despite the importance of diet to growth, limited research exists on the dietary quality of infants and toddlers.

Participants for this study were 181 mother-infant pairs eligible for Early Head Start. Mothers were interviewed in their homes about many aspects of parenting, service use, and family health habits. Interviewers obtained 24-hour dietary recalls of both the mothers (average age 23.3 years, ± 5.2) and their infants at or near the time of enrollment (average age of infants was 6.4 months, ± 3.3) and again when the infants were about 14 months old. Questions were asked at the first interview about consumption of nutritional supplements and participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), Food Stamp, and Medicaid programs. Foods were entered by type and subdivided by the major food groups. The dietary quality of infants at the first data ·collection was classified according to the U.S. Department of Agriculture's guideline for WIC, including the age-/amount-appropriate intake of formula, juice, milk, grains, vegetables and fruits. The dietary quality of mothers and 14-month-old children was examined by food group and by skipping breakfast.

For the two time points, 119 cases could be matched. The percentage of mothers using WIC and Medicaid was 87.5 and 88.7, respectively. Only 58.3 percent of mothers reported receiving food stamps. Most of the mothers (91.5 percent) had inappropriate diets. About two-thirds of mothers consumed a vegetable or dairy food, but fruit consumption was very low at both time points. Mothers' diets were also fairly consistent from the first to the second time point, with only about half of mothers consuming foods from four or five of the food groups. Most infants (82.5 percent) were not fed according to the WIC guidelines. Infants consumed formula in inappropriate amounts and were fed juice, fruit, grains, and vegetables at younger ages than recommended (only 11 infants were breast-fed). Fruits and vegetables were the least frequently consumed food groups for toddlers, but more than 50 percent of toddlers consumed from the five food groups. The percentage of skipped meals was higher for mothers than for toddlers. Forty-one percent of mothers skipped breakfast, but toddlers rarely missed a meal. A poor diet for a mother usually predicted a poor diet for her infant at both time points. There was no relationship between services received and dietary quality.

Even though these limited-income families received health services and most were in WIC, diet quality of most mothers was poor and remained so. Fruits and vegetables were the food groups least likely to be consumed by mothers and toddlers. Infants were often fed inappropriately, although, by 14 months of age, the quality of the children's diets had improved slightly.

TABLE III.2

IMPACTS ON FAMILY HEALTH CARE AND HEALTH STATUS

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]
Percentage of Families Who Received Any Family Health Services	98.0	97.9	0.0
Percentage of Families Who Received Any Mental Health Services	17.2	16.2	1.1
Average Self-Reported Health Status Of Parent Or Guardian[b]			
When child was 14 months old	3.5	3.6	-0.1**
When child was 24 months old	3.5	3.5	0.0
Sample Size	**1,139**	**1,097**	**2,236**

SOURCE: Parent services follow-up interviews conducted approximately 7 and 16 months after random assignment and parent interviews conducted when children were 2 years old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b] Primary caregivers rated their own health status on a scale of 1 (poor) to 5 (excellent).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

16 months after enrollment (Figure III.8).[6] Significantly more program than control families participated in an education or job training program (48 compared with 44 percent). In addition, significantly more program than control families received employment-related services (job search assistance and/or discussion of employment with a case manager): 67 compared with 29 percent by the time of the second followup (Figure III.8).

The Early Head Start programs increased families' receipt of some kinds of assistance designed to help families become self-sufficient and facilitate their access to other critical support services. Most important, the programs increased families' receipt of transportation assistance. Significantly more program than control families received transportation assistance (29 compared to 19 percent) by the second followup (Figure III.8). The programs' impact on receipt of transportation assistance increased over time—from 5 percentage points at the first followup (not shown) to 10 percentage points at the second followup.

2. Differences in Program Impacts on Receipt of Key Services Among Targeted Subgroups of Programs

Beyond the overall impacts on service receipt described in the previous sections, it is important to explore variations in impacts on service receipt among targeted subgroups of programs.[7] Variations in program impacts on service receipt may help explain differences in program impacts on child and family outcomes for subgroups of programs and may highlight successes and challenges that the particular groups of research programs experienced in providing services to families.

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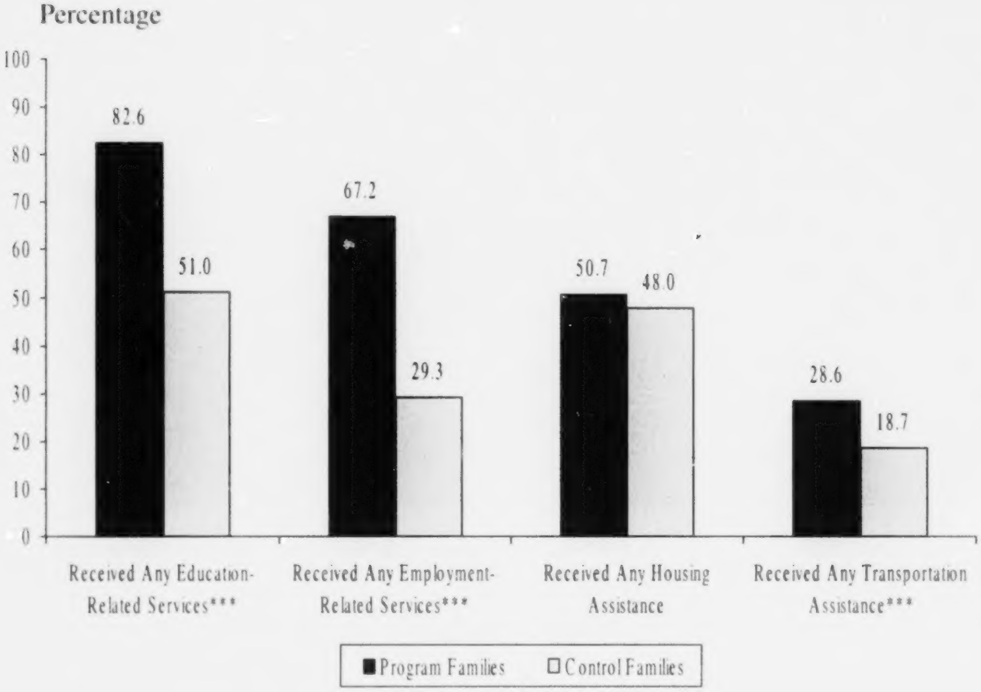
[6] See Chapter VI for a detailed discussion of impacts on self-sufficiency activities and outcomes.

[7] It is also important to explore differences among targeted subgroups of families. These differences are examined in Chapter VII.

FIGURE III.8

IMPACTS ON FAMILY DEVELOPMENT SERVICES BY THE SECOND FOLLOWUP



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Education-related services include school, job training, and/or discussion of education and training with a case manager. Employment-related services include job search assistance and/or discussion of employment issues with a case manager.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

Caution must be used in interpreting the variations in impacts on service receipt among subgroups of programs. The subgroups are defined on the basis of a single program characteristic but may differ in other characteristics. These other unaccounted-for variations in program characteristics may also influence the variations in impacts on service receipt. Thus, in our analyses, we focus on patterns of impacts across outcomes and consider the potential role of other differences in characteristics that may have influenced the outcomes being examined (Table II.7 and Appendix Tables E.VII.31 and E.VII.32 show the configuration of family characteristics across the research sites).

The subgroup analyses show that the impacts of the Early Head Start research programs on service receipt were broad-based and not limited to a particular subset of programs. The estimated impacts on families' receipt of key services were large and significant in nearly all the program subgroups we examined.

Although the impacts on service receipt were large for all groups of programs, the magnitude of the impacts varied among subgroups, usually in expected directions. The variations in the size of the impacts sometimes reflect differences among key groups of programs in the extent to which program families received services and sometimes reflect differences in service receipt by control families among the subgroups, probably as a result of differences in the availability of services across communities. The following sections highlight variations in impacts on service use among subgroups of Early Head Start research programs, variations that can inform our understanding of what program features may promote higher levels of participation and service receipt.

a. Variations in Impacts by Initial Program Approach

As described earlier, the Early Head Start programs adopted different basic approaches to providing child development services, based on the unique needs of the children and families in their communities. In 1997, four programs offered center-based services only, seven offered home-based services only, and six offered both home- and center-based services (in other words, took a mixed approach).

We expected to find differences in program impacts on service receipt that reflected the different approaches these programs took to serving families and children. In general, the variations in impacts are consistent with our expectations. Home-based programs had the largest impacts on the receipt of home visits and group parenting activities, and center-based programs had the largest impacts on the receipt of center-based child care and the amount of center-based care received. Mixed-approach programs tended to produce impacts that were between those of home- and center-based programs, but were often closest in magnitude to the impacts of home-based programs (Figure III.9).

Overall, home-based and mixed-approach programs had the largest impacts on the receipt of any key services (home visits, center-based care, case management, and/or group parenting activities), and home-based programs had the largest impacts on the use of core child development services (home visits and/or center-based care) (Figure III.9 and Appendix Table E.III.1). These differences reflect both lower receipt of services by program families in center-based sites and greater receipt of key services by control families in these sites.

Only center-based and home-based programs had significant impacts on the identification of children with disabilities and receipt of early intervention services. Center-based programs increased identification of children with disabilities by four percentage points and increased receipt of early intervention services by four percentage points (see Appendix Table E.III.1).

Home-based programs had slightly smaller significant impacts on these outcomes (three and two percentage points, respectively).

FIGURE III.9

SELECTED IMPACTS ON SERVICE RECEIPT BY PROGRAM APPROACH IN 1997

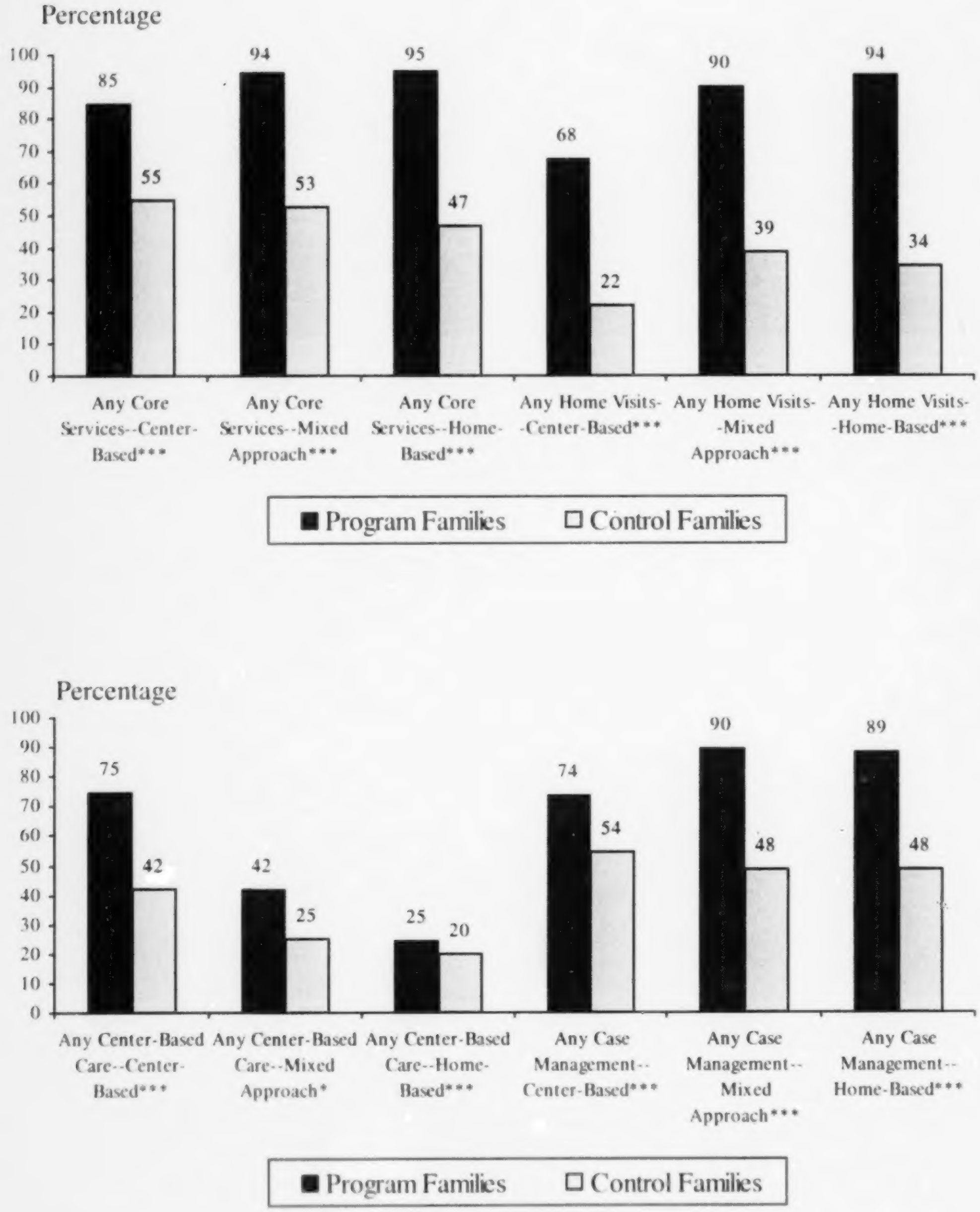
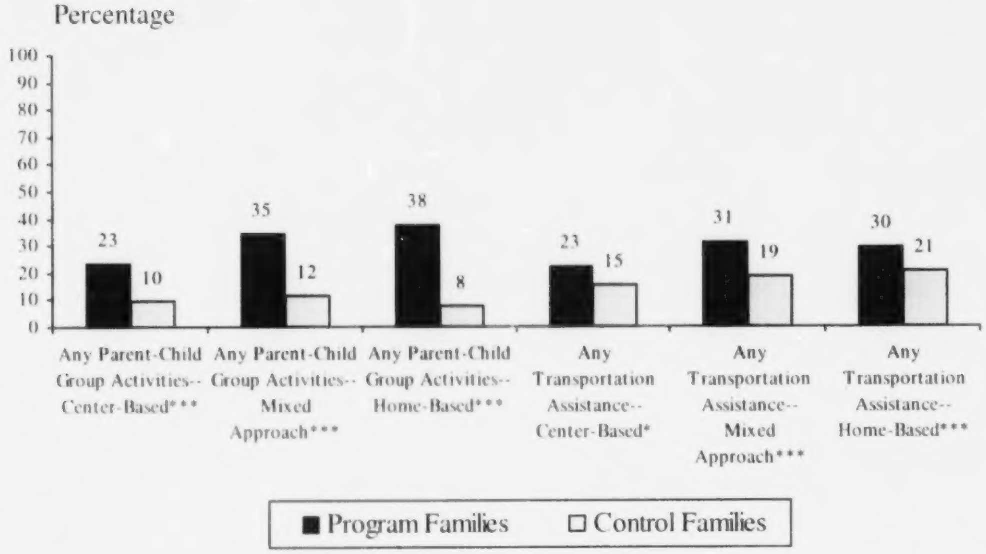


FIGURE III.9 (continued)

SELECTED IMPACTS ON SERVICE RECEIPT BY PROGRAM APPROACH IN 1997



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Core services include at least one home visit or center-based child care.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

The home-based and mixed-approach programs had the largest impacts on receipt of education services, employment-related services, and transportation assistance. The center-based programs, which were located in areas where control families were much less likely to report receiving housing assistance, significantly increased receipt of such assistance (Appendix Table E.III.1).

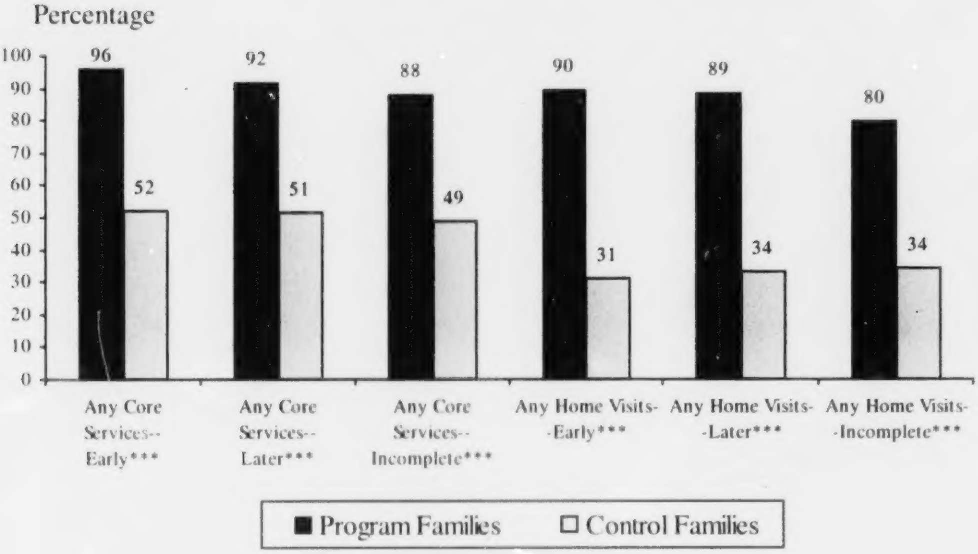
b. Variations by Degree of Program Implementation

Based on the ratings developed in the implementation study, the research programs differed in their patterns of overall program implementation. As summarized in Chapter I and reported more fully in *Pathways to Quality* (Administration on Children, Youth and Families 2001b), six programs were rated as fully implemented in fall 1997 (early implementers), six were not rated as fully implemented in fall 1997 but were rated as fully implemented overall in fall 1999 (later implementers), and five were not rated as fully implemented at either time (incomplete implementers). The incomplete implementers either emphasized family support (with less emphasis on child development) or faced difficult implementation challenges (such as early staff turnover in leadership positions or partnerships that did not work out well).

Early implementation was associated with larger impacts on receipt of core services. Although programs in all three groups significantly increased service receipt, for core services (home visits and center-based child care), the impacts were consistently largest among programs that became fully implemented early (Figure III.10 and Appendix Table E.III.2). The differences in impacts by level of implementation were largest for receipt of frequent home visits and for use of center-based child care. In addition, only early implementers increased receipt of housing assistance, and only early and later implementers increased receipt of transportation assistance.

FIGURE III.10

SELECTED IMPACTS ON SERVICE RECEIPT BY PATTERN OF IMPLEMENTATION



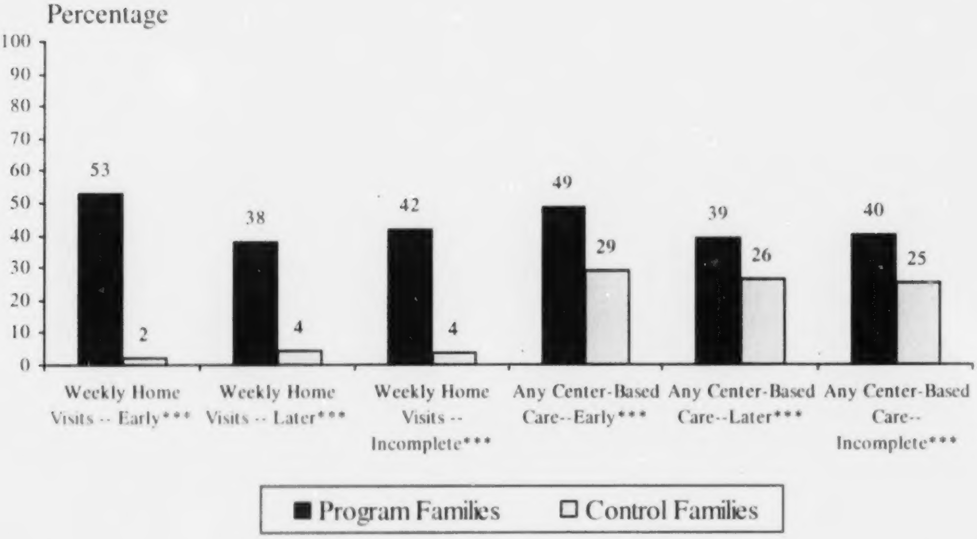
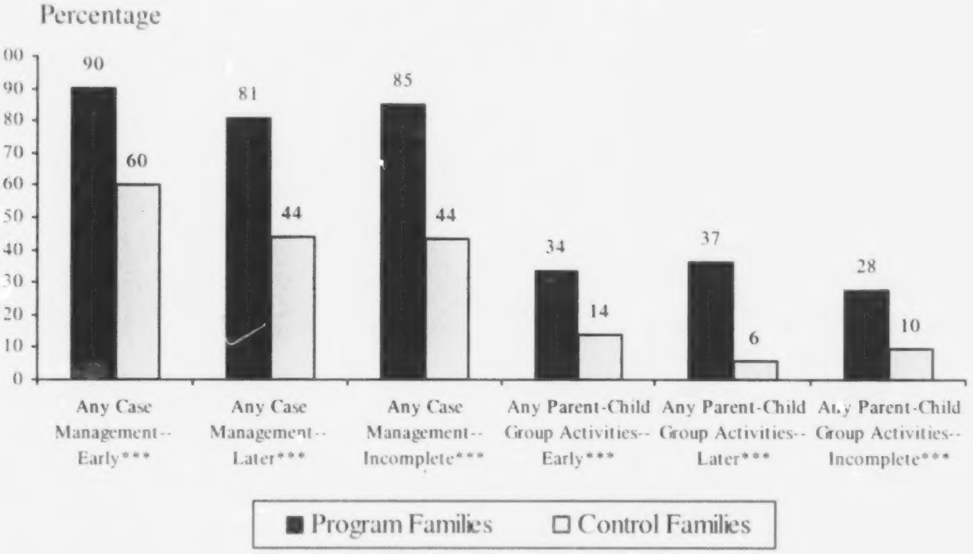


FIGURE III.10 (continued)

SELECTED IMPACTS ON SERVICE RECEIPT BY PATTERN OF IMPLEMENTATION



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Core services include at least one home visit or center-based child care.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

The large impacts of early implementers on receipt of core services are due to higher levels of service receipt in the program group, not lower levels in the control group.

Incomplete implementers had larger impacts than later implementers did on several measures of service receipt, including receipt of frequent home visits, case management, and frequent case management. Several of the incomplete implementers focused on family support and provided case management to many families in home visits but did not fully implement child development services. Control families in the sites served by programs that were fully implemented early were much more likely to receive any case management, and the impact on case management in these sites was smaller than in the other groups of sites.

In the first follow-up period, some impacts on receipt of health services were significant for early implementers. By the time of the second followup, however, most impacts on receipt of health services were not significant. Although this suggests that early implementers helped some families receive health services a few months earlier than they otherwise would have, the impacts were not sustained through the second follow-up period (not shown).

The research programs also varied in their implementation of child development services, which were rated separately as part of the overall implementation rating process.[8] Six programs fully implemented child development services early and sustained full implementation over time. Five programs fully implemented child development services in fall 1997 or fall 1999 but not both. Some were later implementers of child development services, and some fully implemented child development services early but were not able to sustain full implementation. Because the numbers of each were small, we combined these programs into one group: the single-period implementers. Six programs did not fully implement child development services by fall 1999. Ten programs received the same rating for implementation of child development services that they received overall, while the remaining programs received higher or lower ratings on this area of program services. The overlap in ratings makes it difficult to know whether it is overall implementation or implementation of family development services that accounts for the subgroup findings.

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[8] As described in the *Pathways to Quality* report and summarized in Chapter I, the elements of family development services that were considered in the ratings of implementation of such services were individualized family partnership agreements, availability and frequency of family development services, parent involvement in program governance and volunteer activities, and implementation of father initiatives.

The program impacts on the use of center-based child care, the use of concurrent arrangements, and the out-of-pocket costs of child care were larger in programs that fully implemented child development services early and were small in programs that did not fully implement them (Appendix Table E.III.3). The patterns of impacts on the other measures of service use are not as intuitive. In particular, the programs that never fully implemented child development services provided home visits to a higher proportion of families and provided intensive home visits to more families than the programs in the other groups. The similar pattern of case management receipt among program families in the three groups suggests that it is the provision of case management services during home visits, not the provision of child development services, that is responsible for the relatively large impacts on receipt of home visits among programs that never fully implemented child development services.

Based on the ratings of implementation of family development services that were developed in the implementation study, the research programs also varied in their implementation of family development services.[9] Seven programs fully implemented family development services early and sustained full implementation over time. Seven programs fully implemented such services in fall 1997 or fall 1999 but not both. Three programs had not fully implemented family development services by fall 1999. For 12 programs, the rating of implementation of family development services reflected the program's overall implementation rating, while for most of the remaining programs, the rating of implementation of family development services was higher than the rating for overall implementation. Again, it is difficult to determine whether variations in overall implementation or in implementation of family development services account for variations in impacts.

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[9] As described in the *Pathways to Quality* report and summarized in Chapter I, the elements of family development services that were considered in the ratings of implementation of such services were individualized family partnership agreements, availability and frequency of family

Programs that fully implemented family development services early had substantially larger impacts on the receipt of case management (and home visits) at least weekly (Appendix Table E.III.4). They also had slightly larger impacts on receipt of education-related services, family health services, and transportation assistance.

c. Variations by State Work Requirements for Mothers of Infants on Welfare

Seven research programs were located in states that require mothers who have infants under age 1 and who receive welfare cash assistance to meet work requirements, and 10 were located in states that exempt mothers with infants from work requirements. Parents who are required to work are likely to have a greater need for child care and employment-related services. Among the seven programs located in states with work requirements for parents of infants, three were center-based programs, one was a mixed-approach program that offered center-based care to some program families, and three were home-based programs.

(continued)
development services, parent involvement in program governance and volunteer activities, and implementation of father initiatives.

Early Head Start programs had their largest impacts on families' receipt of any key services in locations without early work requirements, mainly because they had a much larger impact on receipt of case management (Figure III.11 and Appendix Table E.III.5). They also increased the use of any child care in states without early work requirements, but did not significantly increase the use of any child care in states with early work requirements.

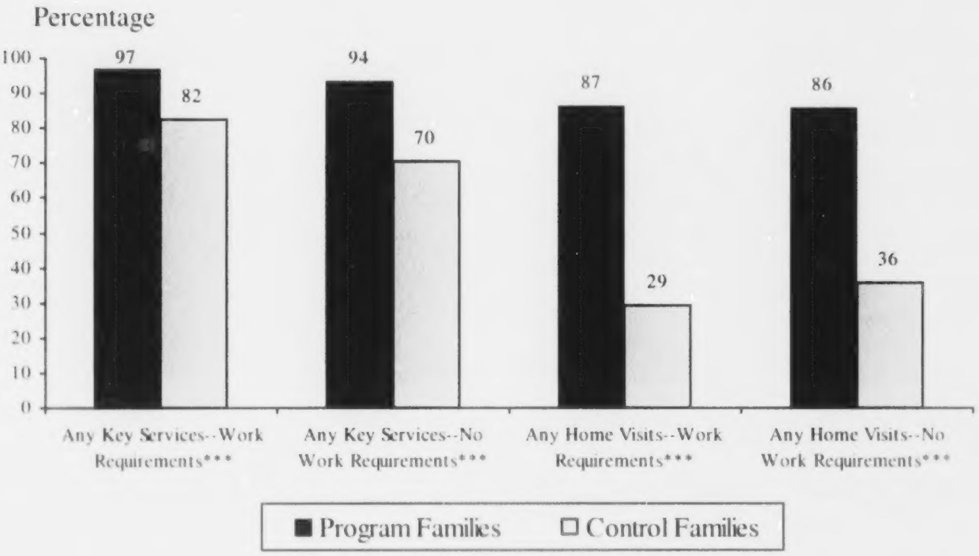
The Early Head Start programs had somewhat larger impacts on the use of center-based care in sites with early work requirements. They increased the use of any center-based care, increased the hours per week of center-based care used, and reduced the out-of-pocket costs of child care of families in both groups of sites (Figure III.11 and Appendix Table E.III.5). However, the impacts on the amount of center-based care used and out-of-pocket child care costs were larger in the sites with early work requirements.

To meet parents' needs, more case management and child care services appear to be available from community sources in locations where mothers of infants are required to work. The variations in control group mothers' receipt of services suggest that in states with earlier work requirements, more case management services are available to support families facing these requirements, and slightly more control families with infants and toddlers used center-based child care in these states (Figure III.11 and Appendix Table E.III.5).

The programs located in states with work requirements for mothers of infants also had a few significant impacts on health-related outcomes, while other programs did not. The programs located in states with such work requirements increased the likelihood that families had taken their child to the doctor for treatment of an illness and that they had taken their child to a dentist, but reduced the likelihood that their child had received lead testing. These impacts may also

FIGURE III.11

SELECTED IMPACTS ON SERVICE RECEIPT BY WORK REQUIREMENTS FOR PARENTS OF INFANTS UNDER 1



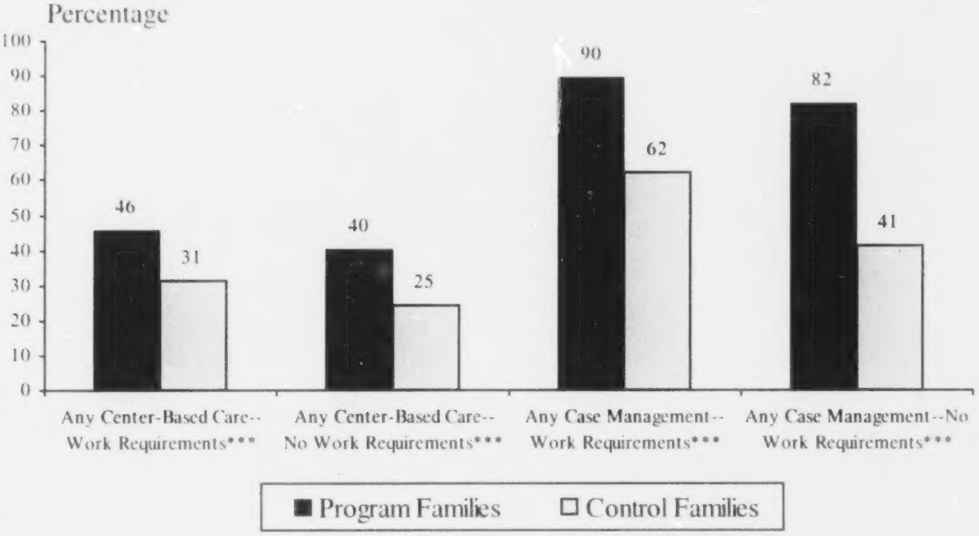
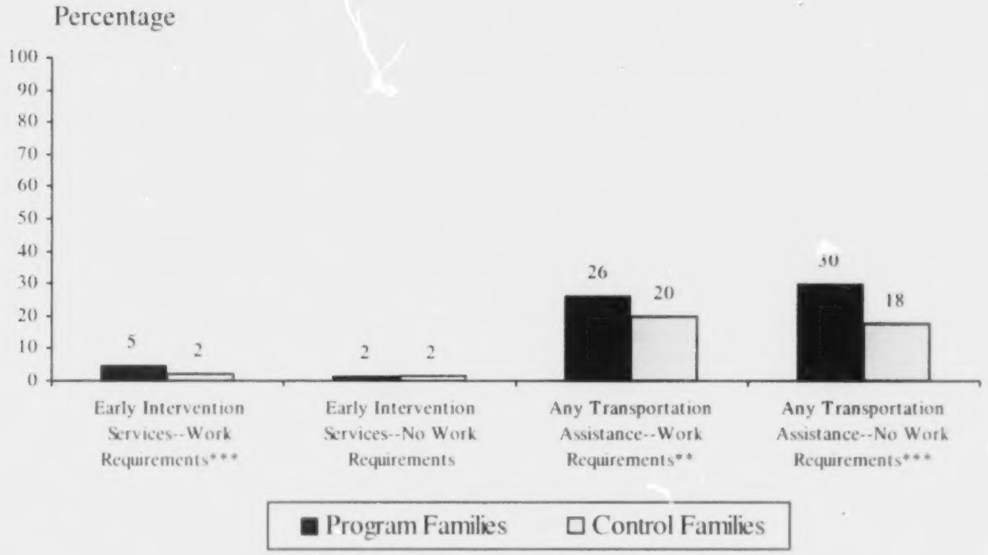


FIGURE III.11 (continued)

SELECTED IMPACTS ON SERVICE RECEIPT BY WORK REQUIREMENTS FOR PARENTS OF INFANTS UNDER 1



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per eligible applicant.

Key services include at least one home visit, center-based child care, at least one case management meeting, and/or participation in a group parenting activity.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

reflect the increases in families' use of center-based child care in these states. The programs located in states with early work requirements also increased the extent to which families received mental health services (Appendix Table E.III.5).

The impacts of the Early Head Start programs on the percentage of children with identified disabilities and the percentage of children and families who received early intervention services were significant for programs located in states that require mothers of infants to work but not significant for other programs. Although control children in states with work requirements were more likely to be identified, program children in those sites were much more likely to be identified and served (Appendix Table E.III.5). These impacts may reflect the increases in families' use of center-based child care and receipt of child health care in these states.

C. IMPLICATIONS FOR CHILD AND FAMILY OUTCOMES

The Early Head Start research programs succeeded in providing key services to most families, and they provided services to more families and provided much more intensive services than control families obtained from other sources in their communities. The estimated program impacts on the receipt of key services (home visits, center-based child care, case management, and/or group parenting activities) were significant, large, and broad-based during the first two follow-up periods.

In several service areas, the estimated impacts on service receipt were not large. In particular, because nearly all children and families in both the program and control groups received health services, the Early Head Start research programs generally did not have a significant impact on health care receipt, and when impacts on health care receipt were significant, they were small in magnitude. Consistent with the lack of large differences in health care receipt, the estimated impacts on the broad overall measures of health status that we collected were small and usually not significant. The few significant impacts on health services receipt and health status measures usually occurred during the first follow-up period and did not persist through the second follow-up period.

The following chapters explore whether these impacts on service receipt led to impacts on child and family outcomes. The next chapter begins by exploring the programs' impacts on key child outcomes when children were approximately 2 years old.

IV. EARLY HEAD START INFLUENCES ON CHILDREN'S DEVELOPMENT

One of the central goals of Early Head Start is to improve the cognitive, social, and emotional development of infants and toddlers in low-income families. Programs may seek to support children's development directly by working with the child in center-based settings, during home visits, or both. Programs may also support children's development indirectly by working with parents to support stronger parent-child relationships, which in turn are expected to nurture and enhance the development of infants and toddlers over the long-term. Some programs focus almost exclusively on working with children directly or working with parents to affect child development, while others give equal focus to both pathways. In addition to pursuing these pathways to child development, programs also focus to some degree on improving family well-being, which may constitute a third, but more indirect, influence on child outcomes. Programs may seek to improve family functioning, and they may help parents move toward self-sufficiency (as discussed in Chapter VI). This chapter presents the impacts of Early Head Start on children's cognitive, social, and emotional development.

A. HYPOTHESES AND BRIEF SUMMARY OF INTERIM FINDINGS

Although Early Head Start programs adopted different approaches, they shared a common goal of improving children's development across all domains, including cognitive and language, social-emotional, and health. As a result, we expect that Early Head Start will have a positive impact overall on the cognitive, social, and emotional development of infants and toddlers. We expect Early Head Start to have a positive influence on children's health and so we included a number of measures of young children's health outcomes. These are primarily based on parent report.[1]

The interim findings reported in this chapter suggest that Early Head Start had modest beneficial impacts on children's cognitive, language, and social-emotional development by the time children were 2 years old. Children's cognitive and language development were significantly enhanced by Early Head Start at 24 months. Early Head Start children scored higher on average on the Bayley Mental Development Index (MDI), and a smaller proportion of Early Head Start children than control group children scored below 85 on the Bayley MDI, which is a cutoff often used to indicate the need for special services. Early Head Start children had larger spoken vocabularies and used more grammatically complex phrases in speech than control group children at 24 months of age. In the domain of social-emotional development, Early Head Start significantly reduced levels of aggressive behavior problems at 24 months of age. In other areas of social-emotional development at that age, however, Early Head Start did not appear to have an overall impact. These included negativity toward parents, engagement with parents, and sustained attention with objects in parent-child interaction, as well as emotional regulation, and orientation/engagement in a cognitive task.

Children spending time in high-quality child care with skilled caregivers are likely to have greater cognitive and language stimulation than they would otherwise, and this may lead to developmental gains in those areas. In addition, children in high-quality child care, with supervision by trained adults, will have opportunities to socialize with their peers and obtain regular feedback about their interactions with peers. Children who might have a tendency to behave aggressively may learn to take turns, regulate their emotional responses, and use verbal rather than physical responses to express themselves. As a result, we would expect children in center-based Early Head Start programs to show more positive social behavior and less negative behavior.

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[1] The evaluation has also included measures of health services obtained for the child, and these services are relatively easy for families to access in the community, as discussed in Chapter III. In addition, some of the local research projects have focused on children's health. A special report that focuses on children's health and disabilities will be available in winter 2002.

Home-based Early Head Start services may lead to increases in parents' emotional support and responsiveness to the child, which in turn may lead children to exhibit more positive social behavior, such as engagement in an interaction with the parent, and a reduced incidence of negative behavior, such as aggressive behavior. Parents receiving parent education and home-based services may learn the importance of frequent talk with children, develop strategies for encouraging their infants and toddlers to communicate with them, read books regularly to their young children, and engage in other parent-child activities that may stimulate early language and cognitive development. If programs have these effects on parents' behavior, we would expect children to benefit by having greater language skills and cognitive development.

Nevertheless, because the routes some programs adopted were more direct than those taken by others, we expect that the timing of impacts on child development may be somewhat different, depending on the program's approach. We expect impacts on the development of children in center-based programs and in mixed-approach programs with center-based services to occur earlier, because staff worked directly with children in these programs to stimulate development. We expect impacts on the development of children in home-based programs to take longer to emerge, because staff work part of the time with the child and part of the time with parents to strengthen the parent-child relationship, enhance parenting skills, and support their efforts to provide an educationally stimulating and emotionally responsive home environment. Effects on mixed-approach programs may depend on whether the services are predominantly center-based or home-based.

Our interim findings suggest that programs providing a mix of center-based and home-based services had relatively strong, positive impacts on children's language and social-emotional development at 24 months of age. Programs providing primarily center-based services had positive impacts on children's cognitive development, but no pattern of impacts on language or social-emotional development. Programs providing only home-based services had a modest positive impact on language development by 24 months of age.

Early Head Start programs also varied in the degree to which they had fully implemented the Head Start Program Performance Standards early in the evaluation period (see Chapter I). We expect that programs that are more successful in meeting the Head Start performance standards for the types, quantity, and quality of services to families will have stronger impacts on children's development than programs that did not completely meet these implementation standards during the evaluation period.

The interim findings suggest that early, full implementation of the Head Start Program Performance Standards does promote positive impacts on children's development. Programs that were rated as "fully implemented" overall at an early stage, and that sustained that implementation over time, had the broadest and most consistent set of positive impacts on a range of children's cognitive, language, and social-emotional development.

B. MEASURES OF INFANT-TODDLER DEVELOPMENT

Measuring the development of young children is more challenging than measuring the development of older children, because direct assessments must be limited in time and scope. Infants and toddlers can neither respond reliably to questions about their development nor endure lengthy assessments. Therefore, we used a variety of methods and sources to measure children's development at 14 and 24 months of age, including direct assessments, parent reports, interviewer observations, and videotaped parent-child interactions, which expert researchers later coded. Where possible, we have used multiple methods of measuring outcomes within a single domain to avoid excessive reliance on any method that may have particular biases or inaccuracies. The measures are described briefly in Boxes IV.1 and IV.2, and in more detail in Appendix C.

C. GLOBAL IMPACTS ON CHILDREN'S DEVELOPMENT

1. Global Impacts on Cognitive and Language Development

a. Cognitive Development

Early Head Start had a positive impact on children's cognitive development at 24 months of age. Children in Early Head Start programs scored higher on the Bayley Mental Development Index than children in the control group, on average. The difference in average Bayley MDI scores was 2 scale points, which represents an effect size of 15 percent (Table IV.1). The difference in average scores reflected a decrease in the percentage of children scoring in the lower portion of the distribution. Children from low-income families typically score below average on standardized cognitive tests, and in the control group, nearly 80 percent of the children scored below 100, the standardized mean of the distribution. Early Head Start had a beneficial impact on the development of children scoring below the standardized mean—it reduced the proportion of Early Head Start children scoring below 100 by nearly five percentage points.

Early Head Start also reduced the percentage of children scoring below 85 on the Bayley MDI (one standard deviation below the standardized mean), a threshold considered to be indicative of need for special education services. At 24 months of age, Early Head Start children

BOX IV.1

MEASURES OF COGNITIVE AND LANGUAGE DEVELOPMENT

Bayley Mental Development Index (MDI) – measures the cognitive, language, and personal-social development of children under age 3½. Children were directly assessed by the Interviewer/Assessor following a standardized protocol.

The MDI is one of three component scales of the Bayley Scales of Infant Development – Second Edition (Bayley 1993). At 24 months, the child is assessed on his/her ability to follow simple spoken directions and on his or her spoken vocabulary during the assessment.

For example, the child is asked to build a tower of cubes; point to a block and a key; point to objects in pictures when the assessor names them; name three objects in a picture book; match three colors; imitate vertical and horizontal strokes; understand directions that include prepositions; and recall geometric forms.

The Bayley MDI was normed on a nationally representative sample of children of various ages so that raw scores can be converted to standardized scores with a mean of 100 and a standard deviation of 15.

The ***percentage of children with Bayley MDI below 100*** *measures the proportion with scores below average for their age in the nationally representative, standardization sample.*
The ***percentage of children with Bayley MDI below 85*** *measures the proportion with delayed performance, or scores one standard deviation or more below the standardized mean.*

MacArthur Communicative Development Inventories (CDI) – measures the language development of infants and toddlers by parent report (Fenson, Bates, Dale, Goodman, Reznick, et al. 2000; Jahn-Samilo, Goodman, Bates, and Sweet 2001). Parents completed the Toddler Form at 24 months. Three measures were derived from this form:

Vocabulary Production – measures the number of words in the child's spoken vocabulary. Parents are asked whether the child says each of 100 common early spoken words, such as "moo," "kitty," "cookie," "up," or "big." Scores range from 0, if the child is not yet speaking, to 100, if the child has used all of the words in speech.

Combining Words – indicates whether the child has begun to use two or more words together to express ideas.

Sentence Complexity – measures the extent to which the child is beginning to combine spoken words in grammatically correct ways. The parent is asked which of two phrases sounds more like the way the child currently speaks. Examples include "kitty sleep" versus "kitty sleeping," and (talking about something that already happened): "doggie kiss me" versus "doggie kissed me." Scores range from 0 if the child is not yet combining words to 37 if he or she always uses the grammatically correct phrase.

BOX IV.2

MEASURES OF SOCIAL-EMOTIONAL DEVELOPMENT

Child Behavior During Parent-Child Structured Play – measures the child's behavior with the parent during a structured play task. The parent and child were given three bags of interesting toys and asked to play with the toys in sequence. The structured play task was videotaped, and child and parent behaviors were coded on a 7-point scale by child development researchers according to strict protocols (see Appendix C). Three aspects of children's behavior with the parent were rated on a 7-point scale:

> ***Engagement*** – measures the extent to which the child interacts with the parent and communicates positive regard and/or positive affect. Very high engagement receives a 7.
>
> ***Negativity Toward Parent*** – measures the child's anger, rejection, or negative reactions to the parent's behavior. Very high negativity receives a 7.
>
> ***Sustained Attention with Objects*** – measures the duration of the child's focus on an object or set of objects during play. Very high sustained attention receives a 7.

Bayley Behavioral Rating Scale (BRS) – measures the child's behavior during the Bayley MDI assessment. The BRS is one of three component scales of the Bayley Scales of Infant Development – Second Edition (Bayley 1993).

> ***Emotional Regulation*** – measures the child's ability to change tasks and test materials; negative affect; and frustration with tasks during the assessment.
>
> ***Orientation/Engagement*** – measures the child's cooperation with the interviewer during the assessment; positive affect; and interest in the test materials.

The interviewer assesses the child's behavior by scoring items on a 5-point scale, with 5 indicating more positive behavior (for example, less frustration and more cooperation). Scores are the average of the items in the subscale.

Child Behavior Checklist – Aggressive subscale – measures the incidence of 15 child behavior problems that tend to occur together and constitute aggressive behavior problems. Parents completed the Aggressive subscale of the Child Behavior Checklist for Ages 2-3 Years (Achenbach 1993; Achenbach, Edelbrock, and Howell 1987). Some behaviors asked about include, "Child has temper tantrums," "Child hits others," and "Child is easily frustrated." For each of the possible behavior problems, the parent was asked whether the child exhibits this behavior often, sometimes, or never. Scores range from 0, if all of the behavior problems are "never" observed by the parent, to 30, if all of the behavior problems are "often" observed.

TABLE IV.1

IMPACTS ON COGNITIVE AND LANGUAGE DEVELOPMENT

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
COGNITIVE DEVELOPMENT				
Bayley Mental Development Index (MDI)	90.1	88.1	2.0***	14.9
Percent with Bayley MDI Below 100	74.6	79.4	-4.8**	11.7
Percent with Bayley MDI Below 85	33.6	40.2	-6.6**	13.5
LANGUAGE DEVELOPMENT				
MacArthur Communicative Development Inventory (CDI): Vocabulary Production Score	56.3	53.9	2.4**	10.8
MacArthur CDI: Percent Combining Words	81.0	77.9	3.1	7.4
MacArthur CDI: Sentence Complexity Score	8.6	7.7	0.9**	11.4
Sample Size				
Parent Interview	**1,092**	**1,021**	**2,113**	
Bayley	**910**	**829**	**1,739**	

SOURCE: Parent interview and child assessments conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

were significantly less likely than control group children to have MDI scores that fell below 85. In the control group, 40 percent of the 2-year-old children scored below 85. For children in this at-risk group, Early Head Start reduced the proportion scoring below 85 by 6.6 percentage points, or about 16 percent (see Figure IV.1).

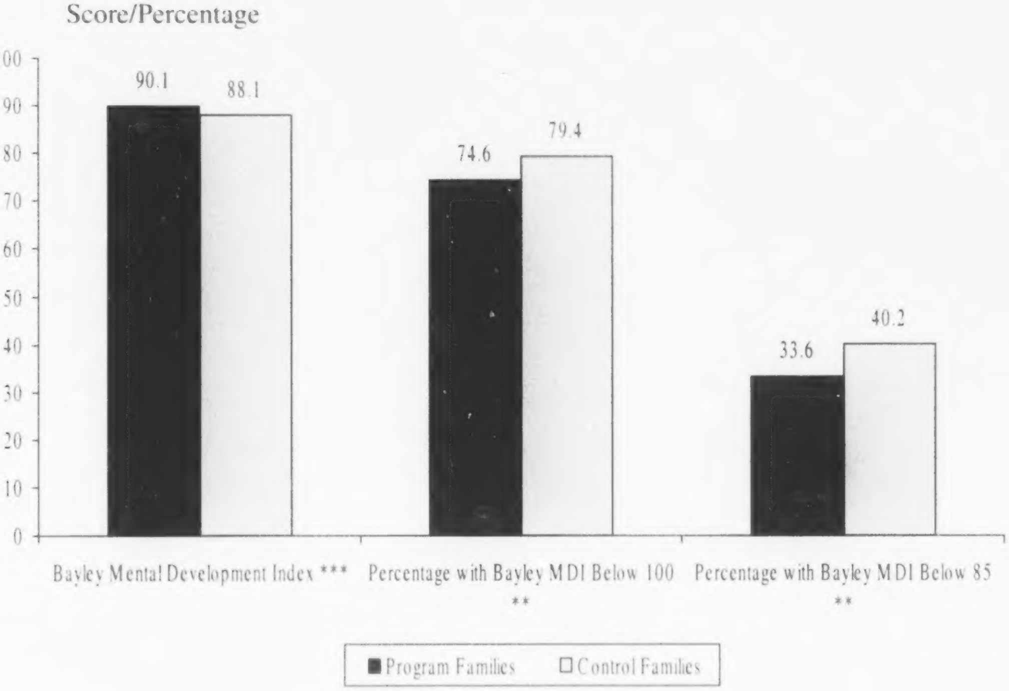
When the data on 3-year-olds are available next year, the cross-site research will investigate mediators of child impacts. Some of the local researchers have conducted preliminary analyses with existing data that may suggest useful strategies. Box IV.3 illustrates one approach taken by the New York University researchers, investigating father-child interaction variables as predictors of children's Bayley performance. The Kansas analysis (Box IV.4) examined program engagement in relation to children's cognitive (Bayley scores), as well as language, development. In a slightly different vein, the Utah State University team has examined the interaction of age and the Early Head Start intervention in relation to children's developmental changes in the first 18 months of life (Box IV.5).

b. Language Development

Early Head Start had a positive impact on children's language development, as reported by parents, at 24 months of age (Table IV.1). Children in Early Head Start programs were using a larger number of words in speech and were more likely to use grammatically-complex phrases in speech than were children in the control group at 2 years. Scores on an index of vocabulary production, or common early words that the parent has heard the child say, were higher by 2 points (an effect size of about 11 percent). Scores on a sentence complexity scale, which measures whether the child is putting words together in a way that indicates he or she is learning

FIGURE IV.1

IMPACTS PER PARTICIPANT ON CHILDREN'S COGNITIVE DEVELOPMENT



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

BOX IV.3

BEYOND ROUGH AND TUMBLE: FATHERING AND COGNITIVE DEVELOPMENT IN 24-MONTH-OLDS

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New York University and the National Institute of Child Health and Human Development

The Early Head Start Fathers workgroup emerged out of a need to understand the nature and meaning of father involvement in low-income families. In New York City, we focused on positive aspects of low-income fathers' interactions with their toddlers and examined whether fathers' interactions predict the cognitive development of their toddlers.

Participants were 45 father-child dyads (23 boys) taken from the first wave of participants in the 24-month cohort in New York City. Fathers' average age was 26 years (SD=7.23), and children were between 23 and 30 months old. Forty-two percent of the fathers were living with their children. Father-child interactions were videotaped during semistructured free play. Bayley Mental Development Index (MDI) scores were obtained on the children. Father-child interactions were assessed using the Caregiver-Child Affect, Responsive and Engagement Scale. The C-CARES measures parent-child interactions on 23 parent and 16 child behaviors. Each item was rated on a 5-point Likert scale ranging from 1 "not observed" to 5 "constantly observed."

Factor analyses on father items indicated a three-factor solution (explaining 66 percent of the variance). The first factor, *Responsive-Didactic* (loading on eight items), reflects paternal behaviors that are positive, responsive, emotionally attuned, and didactic. The second factor, *Negative-Unresponsive-Intrusive* (loaded on seven items), reflects paternal behaviors that are parent-driven and achievement-oriented through use of highly structured, negative verbal reinforcement, unresponsive, intrusive, and inflexible behaviors. The third factor, *Inflexible-Teasing* (loaded on two items), reflects paternal behaviors tnat are inflexible with high levels of teasing. Due to poor reliability, this factor was deleted from further analyses.

The factor analysis on child items revealed a three-factor solution (explaining 72 percent of the variance). The first factor, *Cognitive-Playful* (loaded on five items), reflects child behaviors that were positive in affect, sophisticated in language and play skills, and highly involved with the toys. The second factor, *Social* (loaded on four items), reflects child behaviors that are positive, participatory, responsive, and emotionally attuned toward their father. The third factor, *Regulated-Persistent* (loaded on four items), reflects child behaviors that are highly regulated and persistent.

Children's mean score on the Bayley MDI was 86.13 (SD=11.87). Twenty-five of the children were not developmentally delayed (MDI$\geq$85), and 20 were (MDI<85). A binary logistic regression analysis was performed with children's MDI scores (not delayed/delayed) as the outcome variable, and three predictor variables: *Cognitive-Playful* and *Social* child behaviors and *Responsive-Didactic* father behaviors.

In the logistic regression model, child *Cognitive-Playful* and *Social* behaviors were not significant predictors of delayed status (social: $p = .18$, play-language: $p = .82$). Only father *Responsive-Didactic* behaviors retained its unique significance as a predictor of delayed status ($p = .01$). Based on the nonsignificance of child behaviors, a second model was then run, including only father responsive-didactic behaviors as a predictor, to eliminate spurious expansion effects. This model yielded an odds ratio of 10:1, $p = .001$. The Nagelkerke R^2 indicated that this model explained 33 percent of the variance of children's delayed status.

In summary, this investigation of fathers playing with their 24-month-olds indicated two distinct parental styles of engagement: *Responsive-Didactic* and *Negative-Unresponsive-Intrusive*. Fathers scoring higher on the *Responsive-Didactic* style were *10 times* less likely to have children who scored in the delayed range of the Bayley MDI. *Responsive-Didactic* behaviors in fathers contributed unique variance to Bayley scores, over and above child behaviors during the interaction. Although this suggests the relevance of fathers to the cognitive status of their toddlers, the concurrent nature of the study still leaves the question of causal relationship open.

BOX IV.4

RELATIONSHIPS BETWEEN SERVICES AND CHILD OUTCOMES IN AN URBAN EARLY HEAD START PROGRAM

Jane Atwater, Judith Carta, Jean Ann Summers, and Martha Staker
University of Kansas and Project EAGLE

A primary mission of the Kansas Early Head Start Partnership has been to identify program features and services that are most effective in promoting optimal outcomes for children and families. This mission is fundamental to improving our local program and to contributing to the national knowledge base on effective intervention practice. As a first step in that effort, our interim analyses sought to determine whether differences in service across individual families are related to child progress within Early Head Start. The results of these analyses highlight the importance of active parent engagement to the success of Early Head Start services for young children at risk and suggest that a constellation of services, including quality child care, may support parents' efforts to be actively engaged in services for their young children.

The analysis sample included 77 Early Head Start families in an ethnically diverse, urban community. All families received home-based intervention services. Those with child care needs also received developmentally appropriate, community-based child care.

To track developmental progress, analyses focused on growth over time in children's cognitive development (performance on the Bayley Mental Development Scale) and language development (children's verbal communication during typical activities at home). Child assessments were conducted every four to six months from 8 to 24 months of age.

Program service measures included (1) child's age at enrollment; (2) program model—home visiting only or home visiting plus child care services; (3) duration of services; (4) intensity of home-based services; and (5) parent engagement in the program—a composite based on staff ratings of the consistency in participation over time, active engagement during home visits, and follow-through on individual goals between visits.

In cognitive development, the key result was that children's 24-month outcomes were significantly higher when programs successfully engaged parents as active participants in home-based services. For example, for families in the lowest quartile for engagement, Bayley MDI scores at 24 months averaged 78.46, indicating developmental delay. In contrast, for the most highly engaged families, the mean MDI was 92.74, well within the typical range. For language development, the key result was that, in more highly engaged families, children talked more during home observations and had more rapid increases in verbal communication over time.

As for predictors of engagement, duration of services was positively related to the level of parent engagement. Furthermore, active parent engagement during home-based services was significantly higher in families that also received child care services than in families that had home visits only.

BOX IV.5

KEEPING KIDS ON TRACK: INTERACTIVE EFFECTS OF AGE AND INTERVENTION

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Utah State University

The goal of Utah's Bear River Early Head Start program is to improve outcomes for infants and toddlers by helping parents support early development. To test whether these Early Head Start children are more on track than non-program children, it is essential to look at the interactive effects of Early Head Start and age with regard to developmental change over time. Using a different approach than that of the cross-site study, we included both age and intervention group in our analyses to compare the developmental track for Early Head Start versus the control group children in two critical outcomes: attachment security and cognitive skills.

Results of between-group repeated measures (by age) analysis of variance showed statistically significant interactions between age and group for both attachment security and cognitive skills. For security F (1,137) = 8.9, p = .003; for cognitive skills F (1, 115) = 4.2, p = .04). For attachment security, only Early Head Start toddlers showed a statistically significant increase in their security scores from 14 to 18 months (simple effects test for Early Head Start group, F (1, 137) = 8.2, p = .005). For cognitive skills, Early Head Start toddlers maintained stable standardized test scores, while control group toddlers, similar to others in poverty, began to lose ground as indicated in a statistically significant decrease in their standardized cognitive skills scores (simple effects test for control group, F [1, 115] = 9.4, p = .003).

In summary, toddlers in Utah's Bear River Early Head Start are staying on track, becoming increasingly secure and maintaining progress in cognitive skills, while toddlers in the control group are beginning to get off track. These differences are likely to become greater with time, favoring those on a more favorable developmental trajectory.

more complex rules of grammar, were higher by nearly 1 point (an effect size of about 11 percent).

Kansas researchers explored language development in bilingual children. A summary of their findings appears in Box IV.6.

The impacts on cognitive development and language are promising. The reduction in the percentage of children with Bayley MDI scores below 85 is particularly important, because if this impact is sustained, Early Head Start may reduce cognitive delay in children from low-income, high-risk families, perhaps reducing their need for expensive special services later on. Moreover, the impacts on cognitive competence and language development, if sustained, can provide an important foundation for later reading and improved performance in school.

2. Global Impacts on Children's Social-Emotional Development

Early Head Start had no significant impacts on the child's behavior in a structured play interaction with the mother at 24 months of age. The child's engagement of the parent, negativity toward the parent, and sustained attention with objects during play were not significantly changed by participation in Early Head Start (Table IV.2).

Early Head Start had no significant impacts on the interviewer's rating of children's social-emotional behavior during the Bayley assessment. Children in the Early Head Start and control groups received the same scores, on average, on a measure of emotional regulation during tasks and a measure of orientation or engagement toward the interviewer.

Early Head Start did lead to a reduction in the incidence of parent-reported problems with aggressive behavior at 24 months of age. Parents' responses to the behavior problems scale are partly based on the child's behavior but are also influenced by their views of what constitutes normal child behavior. If Early Head Start influences parents' perceptions of normal behavior, then this could partly explain any impact on measured behavior problems. Children participating

BOX IV.6

FACTORS AFFECTING LANGUAGE OUTCOMES OF YOUNG LATINO CHILDREN IN BILINGUAL ENVIRONMENTS

Judith Cruzado-Guerrero and Judith Carta
University of Kansas

Latino children growing up in bilingual households in inner-city communities are affected by a range of factors that influence their language outcomes. Among these factors are environmental risks, families' degree of acculturation and their expectations for language use related to culture, and amount of exposure to language in and outside the home. This report focuses on these factors in a subsample of 20 children in an urban community from bilingual English/Spanish environments who were involved in the larger Early Head Start national evaluation and whose parents characterized them as being raised in English- or Spanish-dominant bilingual environments.

Bilingual children's language outcomes were measured in both English and Spanish using the MacArthur Communicative Development Inventory. The relative proportion of children's exposure to English and Spanish was estimated based on parents' report of primary and secondary caregivers who regularly spoke English and/or Spanish to the child. Direct observations of the interaction of children with their parents or other primary caregivers were gathered in typical situations in the home. Data were recorded regarding the percent of intervals parents and children spoke in English and/or Spanish. Other parent measures included their language dominance, their degree of acculturation, and their levels of environmental risk.

Here, we present children's outcomes and their relationships to families' characteristics.

- Vocabulary outcomes showed that, on average, when children's vocabulary sizes in English and Spanish were combined, English-dominant children's vocabularies ($M = 478.71$) were larger than those of the Spanish-dominant children ($M = 392.43$).
- Not surprisingly, children in English-dominant families were estimated to have greater relative exposure to English in their environments.
- English-dominant children were observed to spend more time being spoken to in English and to verbalize in English.
- Families who were more likely to verbalize in either language had fewer risks or were more likely to have an Anglo orientation.
- In general, English-dominant families had lower levels of risk and higher levels of acculturation.

TABLE IV.2

IMPACTS ON SOCIAL-EMOTIONAL DEVELOPMENT FOR THE FULL SAMPLE

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Parent-Child Structured Play: Engagement of Parent[e]	4.3	4.2	0.1	7.6
Parent-Child Structured Play: Negativity toward Parent[e]	1.7	1.8	0.1	8.0
Parent-Child Structured Play: Sustained Attention with Objects[e]	5.0	5.0	-0.1	6.8
Bayley Behavior Rating Scale (BRS): Emotional Regulation in a Cognitive Task (average score)[f]	3.6	3.6	-0.0	-1.4
Bayley Behavior Rating Scale (BRS): Orientation/ Engagement in a Cognitive Task (average score)[f]	3.7	3.6	0.0	0.5
Child Behavior Checklist: Aggressive Behavior Problems (average score)	9.9	10.5	-0.6**	-10.2
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[e] Behaviors are observed during the videotaped Parent-Child Structured Play task and coded on a seven-point scale.

[f] Behaviors are observed during the Bayley assessment and rated on a five-point scale by the Interviewer/Assessor.

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

in Early Head Start received aggressive behavior-problem scores that were 0.6 percentage points lower, on average, than the scores received by children in the control group (effect size of 10 percent). Achieving lower aggressive behavior problem scores is important, because higher aggression at an early age is a precursor to poor behavioral adjustment in school and subsequent poor academic performance (McKinney and Speece 1986; and Sroufe and Egeland 1989). If a reduction in aggressive behavior problems is sustained, then later school performance may be improved.

D. VARIATIONS IN IMPACTS ON CHILDREN'S DEVELOPMENT, BY PROGRAM APPROACH[2]

The Early Head Start programs adopted different basic approaches to providing child development services. At the time of our 1997 implementation visits to the 17 research programs, we found that four programs offered only center-based services to families; seven offered only home-based services to families; and six offered services of both types, which provided some flexibility in determining the services that families would receive to best meet their needs. The 1997 site visits correspond to the period in which most of the infants and toddlers in the sample were 14 months old, so the 1997 program approaches are relevant to understanding the child impacts measured in this report.

1. Cognitive and Language Development

Early Head Start had a positive impact on the average Bayley MDI scores of children in center-based programs at 24 months of age (Figure IV.2), but the impacts on average Bayley MDI scores for children in home-based and mixed programs were not significant. Previous

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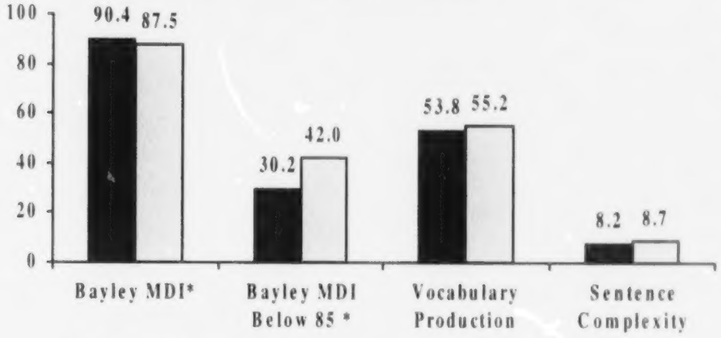
[2] In this chapter, we present figures with the subgroup findings from the targeted analyses. For details of subgroup means, effect sizes, sample sizes, and the significance of the differences across subgroup impacts, see tables in Appendix E.IV.

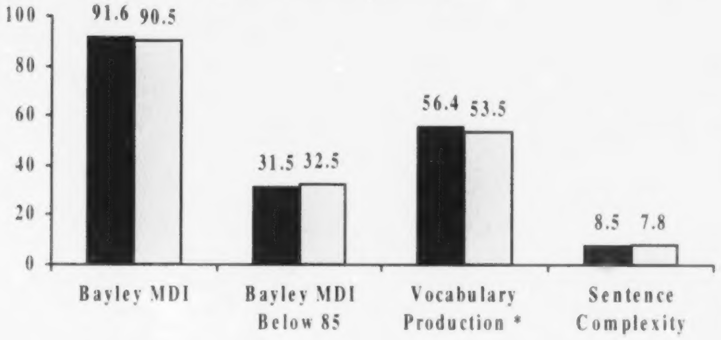
FIGURE IV.2

IMPACTS PER PARTICIPANT ON COGNITIVE AND LANGUAGE DEVELOPMENT, BY PROGRAM APPROACH

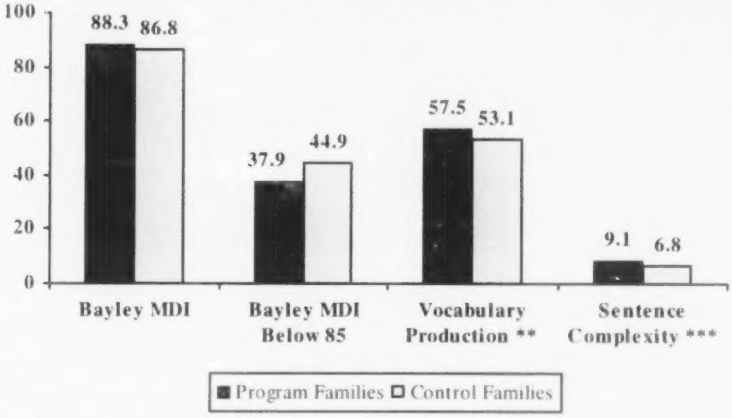
Center-Based Programs (Score/Percentage)



Home-Based Programs (Score/Percentage)



Mixed-Approach Programs (Score/Percentage)



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

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evaluations of center-based, early childhood interventions have also found positive impacts on Bayley scores by 24 months of age, as noted in Chapter I. For Early Head Start children in center-based programs, Bayley MDI scores were higher by nearly 3 points, for an effect size of 22 percent.

Children in center-based Early Head Start programs were also significantly less likely than children in the control group to score below 85 on the MDI at 24 months. The proportion of children in center-based Early Head Start programs scoring below 85 on the Bayley MDI was 30 percent, compared with 42 percent of the control group, a reduction of 28 percent in the proportion of more seriously at-risk children (and an effect size of 24 percent).

Impacts on language development occurred within a different subgroup of programs. Children in mixed-approach Early Head Start programs had significant, positive gains in language development at 24 months of age. Children in Early Head Start programs that adopted a mixed approach had larger spoken vocabularies at 24 months than did children in the control group. They also were more likely to be combining words at 24 months, and they were using more grammatically complex phrases. Children in home-based Early Head Start programs also had gains in spoken vocabulary at 24 months, but there were no impacts on the proportion combining words or on the grammatical complexity of their speech. There were no impacts on language development in center-based programs.

We explored whether the findings on language impacts by program approach were biased by the fact that parents were reporting about their children's language skills. To examine this issue, we factor-analyzed the Bayley items at 24 months and identified a set of language items that have good psychometric properties. We used these items to create a Bayley "language score" that would enable us to compare the maternal report measure to one based on direct assessment. (Information about the scale is included in Appendix C.)

The pattern of impacts suggests that there is consistency across the three program approaches between parent reports of language and children's language ability as measured by the Bayley Language score. We found impacts on the Bayley Language score in the mixed programs, where we had also found positive impacts on the parent-reported language measures. We found no impacts on the Bayley Language score in center-based programs, where we also found no impacts on parent-reported language measures. We also found no impact on the Bayley Language score in home-based programs, where we had found a positive impact on only one of the parent-reported language scores (vocabulary).

2. Social-Emotional Outcomes

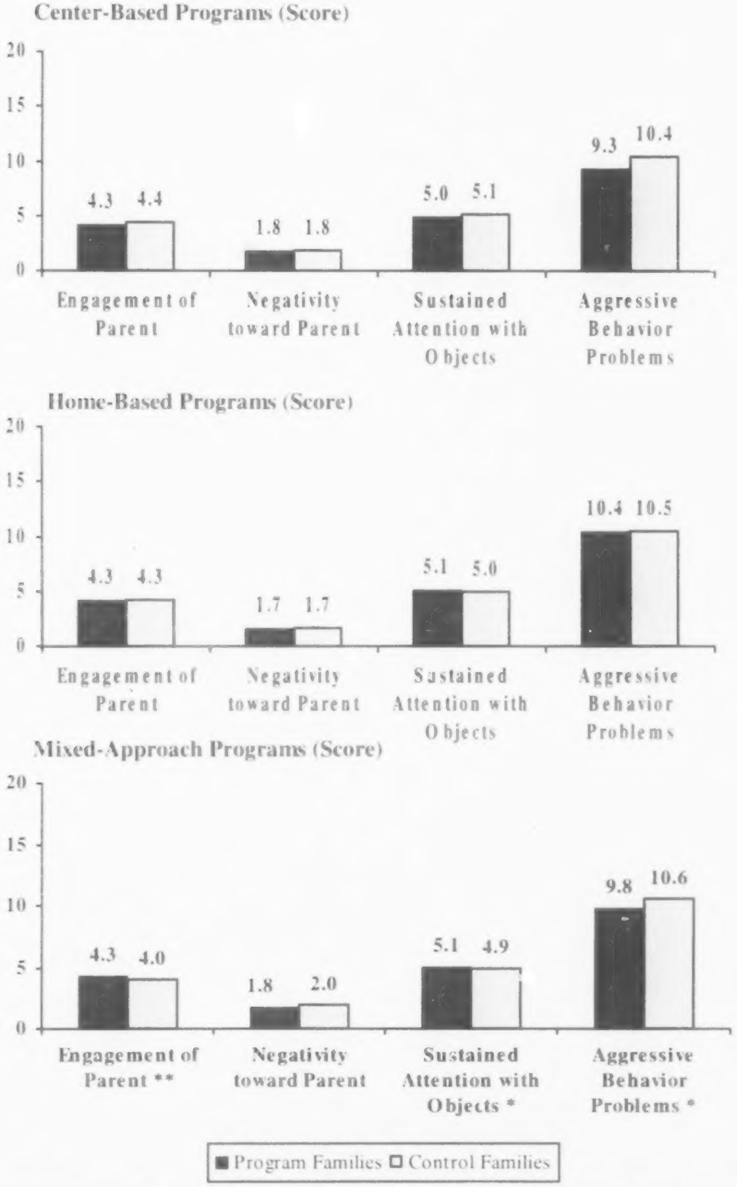
Early Head Start programs that were mixed-approach in 1997 had positive impacts on children's behavior at 24 months (Figure IV.3). During parent-child structured play, Early Head Start children in these programs showed more engagement with the parent and more sustained attention with objects than did children in the control group. Moreover, mixed-approach Early Head Start programs reduced aggressive behavior problems at 24 months of age. Early Head Start center-based and home-based programs had no pattern of statistically significant impacts on measures of social-emotional development at 24 months of age.

3. Summary

The pattern of child development findings by program approach was not completely expected. However, program approaches are not randomly determined, but instead, Early Head Start programs chose program approaches and an array of services to provide the best match for their community contexts and the population of families they expected to serve. In fact, as we note in Chapter II, the characteristics of families differed by program approach, as did community characteristics and implementation levels. Thus, the pattern of results does not tell

FIGURE IV.3

IMPACTS PER PARTICIPANT ON SOCIAL-EMOTIONAL DEVELOPMENT, BY PROGRAM APPROACH



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

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us about the effectiveness of a particular type of program in sites that chose a different program approach, because of other differences in the characteristics of these sites. We can conclude, however, that each of the approaches chosen by the programs had important impacts on children's development by 24 months of age.

E. VARIATIONS IN IMPACTS ON CHILDREN'S DEVELOPMENT, BY PROGRAM IMPLEMENTATION LEVEL

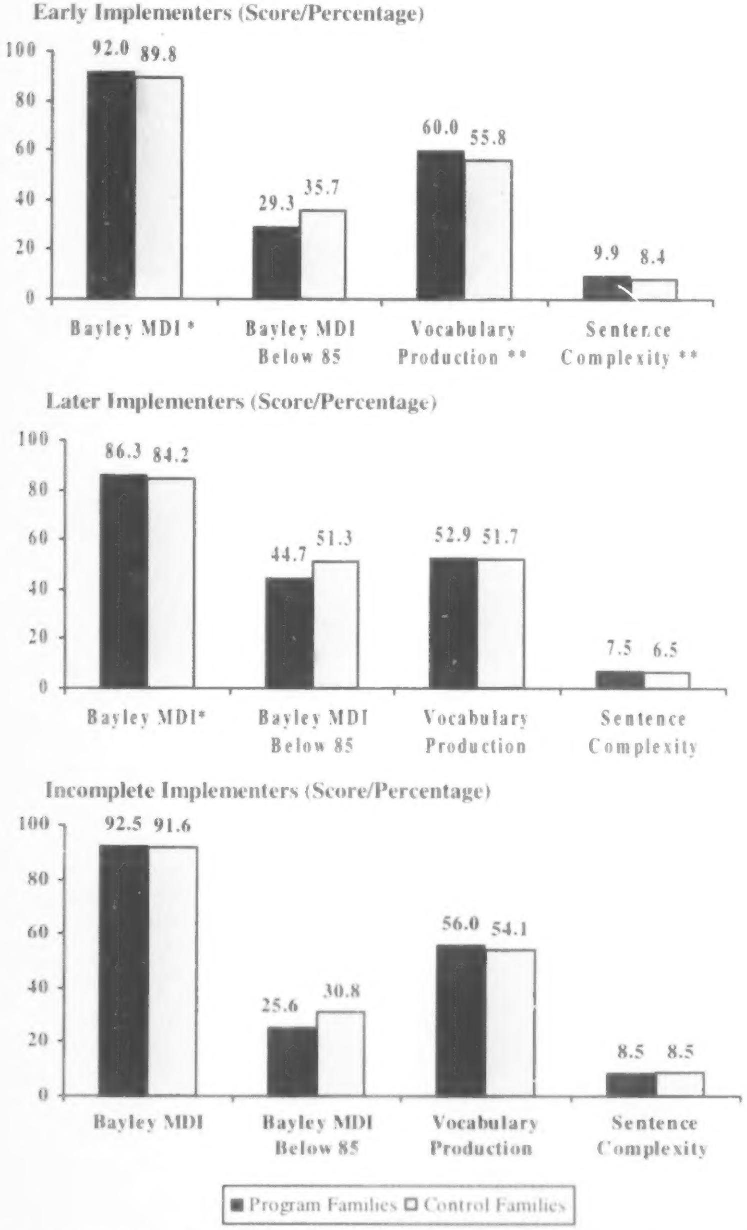
As part of the implementation study, Early Head Start programs were rated on their overall implementation of the major program elements in both fall 1997 and fall 1999 (see Chapter I and Appendix C). Six programs were rated as fully implemented in fall 1997 (early implementers), six programs were rated as not fully implemented in fall 1997 but were rated as fully implemented overall in fall 1999 (late implementers), and five programs were rated as not fully implemented at either time (incomplete implementers). The incomplete implementers either emphasized family support (thus placing less emphasis on child development) or faced difficult implementation challenges (such as early staff turnover in leadership positions or partnerships that did not work out well). Programs that were rated as fully implemented in both periods cut across all program approaches.

1. Cognitive and Language Outcomes

Early Head Start programs that were early implementers and later implementers had a statistically significant impact on children's cognitive functioning as measured by the Bayley MDI at 24 months (Figure IV.4). In both cases, the difference in scores between Early Head Start children and those in the control group was 2 points, and the effect size was 16 percent. There were no impacts on children's Bayley scores in the programs that were rated as not fully implemented in either period (incomplete implementers).

FIGURE IV.4

IMPACTS PER PARTICIPANT ON COGNITIVE AND LANGUAGE DEVELOPMENT, BY PATTERN OF IMPLEMENTATION



Early Implementers (Score/Percentage)

Later Implementers (Score/Percentage)

Incomplete Implementers (Score/Percentage)

Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

Early Head Start programs that were early implementers also had statistically significant impacts on key aspects of children's language development. At 24 months, compared with children in the control group, Early Head Start children in these programs (1) scored significantly higher on vocabulary production, (2) were more likely to be combining words rather than using one-word phrases (not shown), and (3) used phrases that were grammatically more complex. There were no statistically significant impacts on language development for Early Head Start children in programs that were later implementers or for children in programs that were incomplete implementers.

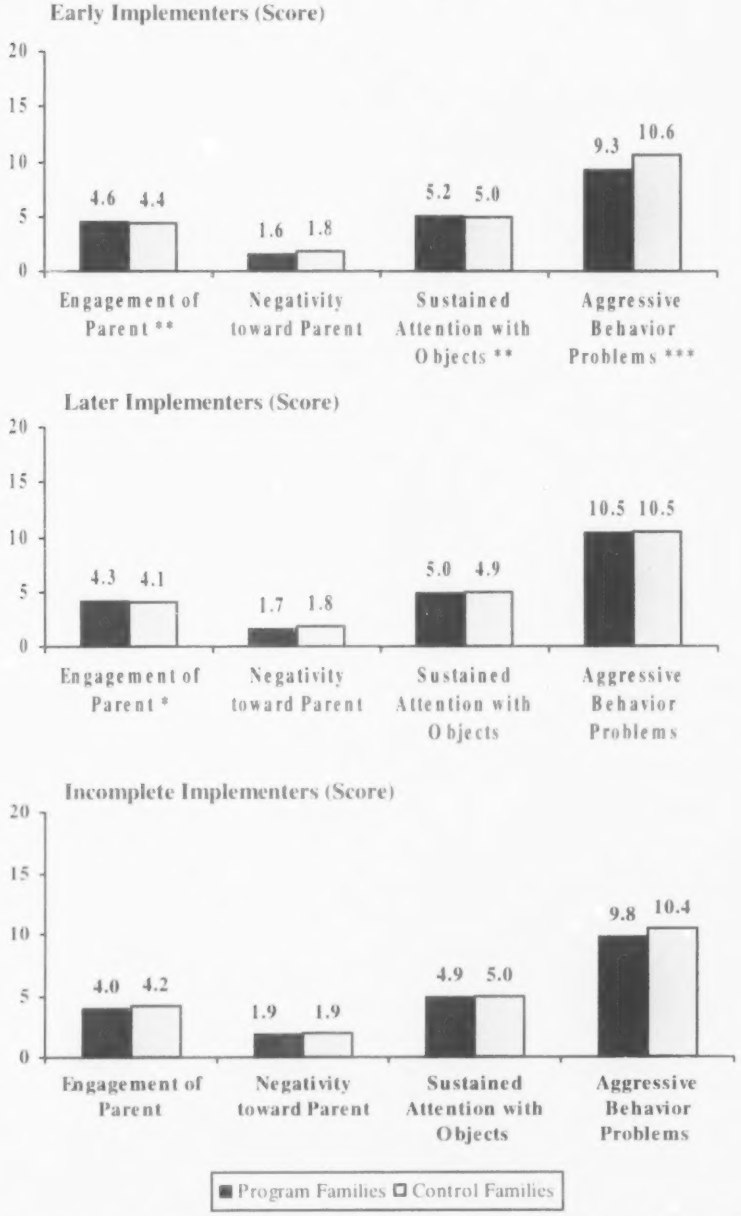
2. Social-Emotional Outcomes

Early Head Start programs that were early implementers had statistically significant impacts on several important aspects of children's social-emotional development at 24 months (Figure IV.5). Early Head Start children in these programs received significantly higher scores than control group children on aspects of their interactions with parents during parent-child structured play. Early Head Start children were more engaged with the parent and showed greater sustained attention with objects. Early Head Start children in these programs were rated as showing significantly greater emotional regulation than control group children during the Bayley assessment at 24 months of age with an effect size of 14 percent (not shown). Early Head Start children in these programs had significantly lower aggressive behavior problems scores than did control group children at 24 months of age.

Early Head Start programs that were later or incomplete implementers did not have a pattern of consistent positive impacts on children's social-emotional development. Measures of the child's interactions with the parent during parent-child structured play were for the most part not significantly different. Only engagement of the parent was higher for Early Head Start children in programs that became fully implemented later. There was no difference between Early Head

FIGURE IV.5

IMPACTS PER PARTICIPANT ON SOCIAL-EMOTIONAL DEVELOPMENT, BY PATTERN OF IMPLEMENTATION



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

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Start and control group children in aggressive behavior problems reported by the parent in either later-implemented programs or incompletely implemented programs.

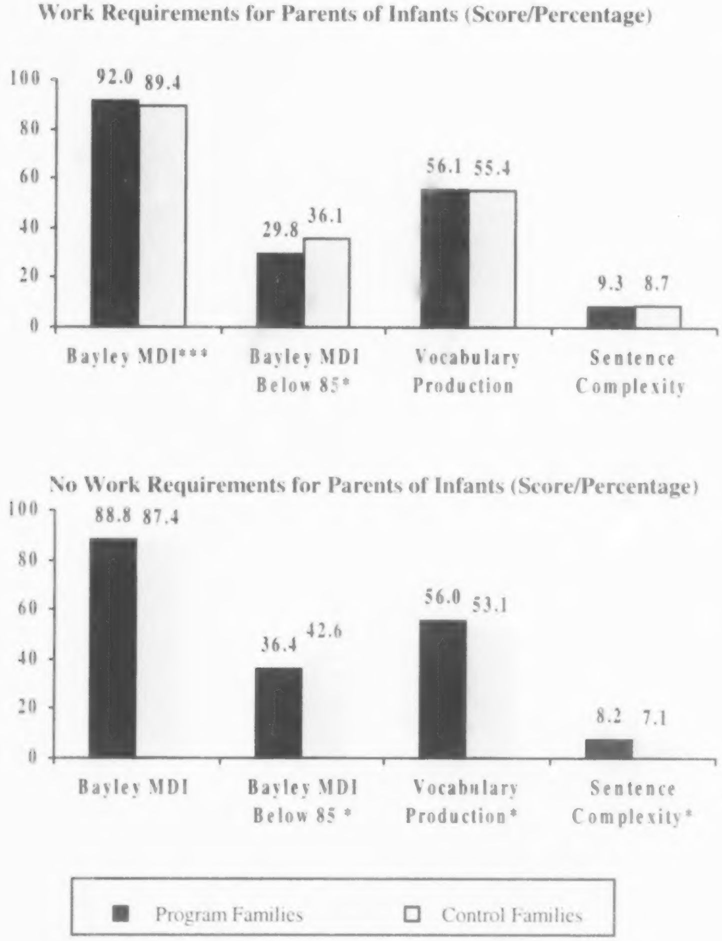
F. VARIATIONS IN IMPACTS ON CHILDREN'S DEVELOPMENT, BY WELFARE-RELATED WORK REQUIREMENTS

Characteristics of the communities in which Early Head Start programs operate may make it more challenging for programs to serve families and may influence the level and types of services families in the control group receive. In about 40 percent of the research-site communities, parents receiving welfare were required to work when their children were under 12 months of age (although most of these communities exempted parents from work if the child was under 3 months old). Early Head Start programs in these communities may face the challenge of serving many families in which the mothers are trying to meet the work requirements while parenting a young infant. Helping parents navigate welfare-related work requirements and find high-quality child care may take time away from helping them build supportive relationships with their children. On the other hand, if programs help parents manage their welfare-related work requirements, the parents may experience less stress than in the absence of the program, thus enabling them to focus on building a supportive relationship with their child. Moreover, if programs help parents find better-quality child care, this may further enhance children's outcomes.

Early Head Start programs in sites in which parents receiving welfare are required to engage in work activities while the child is an infant had a positive impact on children's cognitive development but no impact on language development (Figure IV.6). Bayley MDI scores were higher in the Early Head Start group by 2.6 percentage points (effect size of nearly 20 percent), and the proportion of children scoring below 85 on the Bayley MDI fell by 6.3 percentage points.

FIGURE IV.6

IMPACTS PER PARTICIPANT ON COGNITIVE AND LANGUAGE DEVELOPMENT, BY WELFARE-RELATED WORK REQUIREMENTS



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

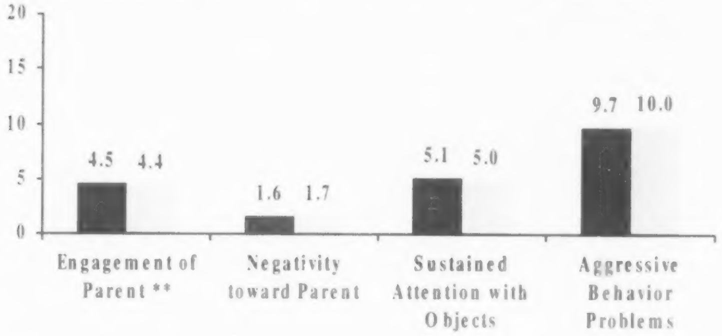
Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

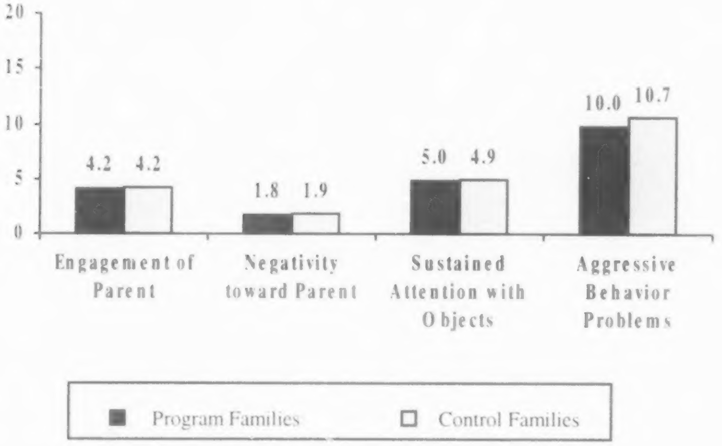
FIGURE IV.7

IMPACTS PER PARTICIPANT ON SOCIAL-EMOTIONAL DEVELOPMENT, BY WELFARE-RELATED WORK REQUIREMENTS

Work Requirements for Parents of Infants (Score/Percentage)



No Work Requirements for Parents of Infants (Score/Percentage)



Source: Parent interviews, child assessments, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

In social-emotional development, only the child's engagement of the parent during parent-child structured play was favorably influenced by Early Head Start in this subgroup of programs (Figure IV.7).

Early Head Start programs in sites in which parents receiving welfare are deferred from work requirements until the youngest child is 1 year old improved language development and reduced the proportion scoring below 85 on the Bayley MDI. In this subgroup of programs, vocabulary production and sentence complexity scores were higher for Early Head Start children, but there were no impacts on social-emotional development.

The findings suggest that Early Head Start programs are having important impacts on children's development regardless of the site's welfare-related work requirements for parents of infants. The specific pattern of impacts on children's development is difficult to explain, but is broadly related to the program approaches found within each subgroup. Three of the four center-based programs are in the subgroup of sites in which parents of infants are required to work under welfare policies, while the majority of home-based and mixed-approach programs are found in the subgroup that allows welfare recipients to defer work for the child's first year. Nevertheless, these impacts may best be viewed as interactive effects of policies, program approach, and other site features, rather than stemming mainly from the program approach found within each welfare-related subgroup. Early Head Start programs adopted program features given their community contexts and eligible populations, so these features of the sites are not fully separable in the analysis. Thus, we can conclude that within subgroups of sites defined by the different welfare-related work requirements, Early Head Start programs chose models and provided an array of services that had an impact on children's development by 2 years of age.

V. EARLY HEAD START INFLUENCES ON PARENTING

One of the major goals of most Early Head Start research programs is to encourage close, supportive relationships between parents and their infants and toddlers, both for their own sake and because such relationships constitute an important pathway for children's development. Close relationships are necessary to provide infants and toddlers with the emotional support to develop trusting relationships with important adults in their lives, to learn to regulate their emotional responses, and to play cooperatively with their peers. Parent-child relationships that also include talking, reading, and encouragement of new developmental experiences can promote the cognitive development of infants and toddlers. A strong parent-child bond can support and extend the development of infants and toddlers, both during the Early Head Start program period, and into the future, well beyond the point at which Early Head Start services end. The participation of fathers is also important for children's well-being, and Early Head Start programs often made special efforts to involve fathers. At the conclusion of this chapter, we describe activities of the men in the lives of Early Head Start children.

To build supportive parent-child relationships, program staff worked with parents and their infants and toddlers during home visits, group socializations, parent education meetings, and exchanges in center-based settings to model adult-child interactions that support positive child development and focus on positive parenting approaches. For these reasons, the Early Head Start impact study included an array of measures that would enable us to examine the impacts of Early Head Start on the home environment, parenting behavior, and parents' knowledge of infant-toddler development. These are the focus of this chapter.

A. HYPOTHESES AND BRIEF SUMMARY OF INTERIM FINDINGS

Many of the Early Head Start research programs reported that a major program goal is to help families build supportive parent-child relationships. Therefore, after parents have had some experience in the program, we would expect to find that they show more positive and supportive parenting behaviors and fewer negative or harsh parenting behaviors than do parents in the control group.

The interim findings reported in this chapter suggest that Early Head Start did increase parents' emotionally supportive parenting behaviors and reduce the incidence of some but not all of the negative parenting behaviors we measured. In addition, we found that Early Head Start parents were more likely than control group parents to provide a home environment that stimulates cognitive development, language development, and literacy, and to engage in parenting behaviors, such as regular reading to the child, that reinforce these goals.

Many of the programs also identified a major program goal as improving parents' knowledge of child development. Better knowledge of typical developmental milestones at each age and what to expect from children behaviorally at each age can help parents to understand their children's perspectives, form reasonable age-appropriate expectations, and interact more positively with them. Discussing positive strategies for preventing or defusing predictable conflicts with children (such as a temper tantrum in a public place or the child's refusal to eat a meal) can help prepare parents to respond more constructively when these situations arise. Programs provided information on child development through group parenting education sessions and individual home visits. We also expect that home visitors addressed issues of child safety in the home in their meetings with parents. In general, we expect stronger impacts on parenting knowledge than on behavior and the home environment, because it is easier to impart greater knowledge of a topic like child development or behavior management strategies than it is to affect the associated behavior.

Our interim findings suggest that when children were 2 years old, mothers who had participated in Early Head Start had greater knowledge of the typical behavior and development of a 2-year-old child and that they were more likely to suggest positive discipline strategies to defuse predictable conflicts with their toddlers. However, we found no evidence that Early Head Start had an impact on child safety practices in the home.

Programs that delivered services mainly through home visits had many opportunities to help parents develop supportive relationships with their children through modeling responses to the child's behavior during home visits and group socializations, by responding to questions that parents have during the visits, and through the curriculum that structured the home visits. Therefore, we expect home-based programs to have an impact on a range of parenting behavior and knowledge. The interim findings discussed in this chapter suggest that home-based Early Head Start programs increased parents' emotional support for the child, improved the stimulation of cognitive and language development through home environment and parenting behavior, and reduced some negative parenting behavior. Home-based Early Head Start programs also increased knowledge of child development but had little impact on parents' reported discipline strategies.

Parents in center-based programs may have more frequent opportunities to observe staff modeling positive interactions with children through the daily dropping-off and picking-up of children at the center. Programs that provided mainly center-based services may have had fewer opportunities than home-based programs to provide parents with information about children's development; however, these programs offered parent education meetings on a regular basis. Center-based programs, by design, have less direct and intensive contact with parents (primarily in parent meetings and two home visits per year) than home-based programs, which aim to meet with parents weekly for at least an hour.

Our interim findings suggest that center-based Early Head Start programs had no impacts on emotional support for the child or on negative parenting behavior, although in the area of cognitive and language stimulation, Early Head Start had a positive impact on structuring the child's day (setting a bedtime) and promoting more frequent reading. Center-based Early Head Start programs had no impact on knowledge of child development, but did lead parents to suggest more positive discipline strategies and avoid more punitive strategies.

Parents in programs that provided a mixed approach, in which parents could receive either home visits or center-based services (or a mix of these services at the same time or over time), may have had an opportunity to benefit from parenting support in ways characteristic of both center- and home-based program approaches. Our interim findings suggest that mixed Early Head Start programs had a consistent pattern of positive impacts on parenting behavior and knowledge. Parents in mixed programs were more emotionally supportive of the child, created a home environment that provided more stimulation for language and learning, engaged in behaviors that supported language and learning, and were less likely to exhibit negative parenting behaviors. Mixed Early Head Start programs also had a positive impact on parents' knowledge of infant-toddler development.

Not only does the Early Head Start evaluation encompass programs following a variety of approaches and situated in many different geographic areas, but it also includes programs that vary in implementation levels. The Early Head Start evaluation was launched shortly after the federal program began, and not all of the local programs had reached a level of "full implementation" of the Head Start Program Performance Standards (see Chapter I). We expect that programs that are more successful in meeting the Head Start performance standards for the types, quantity, and quality of services to families will have stronger impacts on parenting behavior and knowledge than programs that did not completely meet these implementation standards during the evaluation period.

Our interim findings suggest that implementation status is directly related to a pattern of positive impacts of Early Head Start on parenting outcomes. Programs that were early implementers had a pattern of strong impacts on a wide range of parenting behavior and knowledge, whereas those programs that were later or incomplete implementers showed substantially fewer statistically significant effects.

B. MEASURES OF PARENTING

To measure the impacts of Early Head Start on parenting behavior and the home environment, we have tapped three important areas:

- Emotional support, which includes the parent's warmth and affection toward the child, positive feelings about the child that are conveyed to others, and appropriate responses to needs that the child communicates
- Stimulation of learning and language, which includes the mother providing a variety of toys that foster development, structuring the child's environment to promote learning, and talking and reading to the child regularly, and her approach to teaching the child a new task
- Negative aspects of parenting, which include insensitivity, emotional detachment from the child, hostility, anger, and punitiveness

We used several sources of measures of parenting behavior and the home environment, including parent reports; interviewer observations of the parent's behavior toward the child during the interview; and coding of videotaped, semi-structured parent-child interactions.[1] Multiple measurement sources are important if we are to obtain an accurate picture of parenting.

---

[1] The measures are described in boxes, as referred to in the sections where we present the findings.

Some parenting practices are commonly understood to be either beneficial or harmful to children, but parents might not always engage in the beneficial ones or might sometimes exhibit a harsh practice. Nevertheless, parents may respond to questions about their behavior in ways that are socially desirable, but that do not accurately reflect their behavior. Multiple measurement sources that include independent observations help to guard against this possibility.

We assessed parenting knowledge in three areas: (1) knowledge of infant-toddler development and developmental milestones; (2) knowledge of positive discipline strategies for infants and toddlers; and (3) safety practices. All of these were assessed by direct parent report.

C. GLOBAL IMPACTS ON PARENTING

Early Head Start had modest, positive impacts on several dimensions of parenting. In this section, we first discuss program impacts on parenting behavior and the home environment, which encompass the activities of parents with children and the qualities of the home environment. We discuss program impacts on parenting knowledge separately, because knowledge may not always be consistent with behavior.

1. Parenting Behavior and the Home Environment

Parenting behavior includes both positive behavior, or parenting that is emotionally or cognitively supportive, and negative behavior, or parenting that is insensitive, hostile, or punitive. In this section, we discuss Early Head Start impacts on emotionally supportive behavior, the home environment and stimulation of language and learning, and negative parenting behavior.

a. Parent Emotional Support for the Child

Early Head Start had modest, positive impacts on the emotional support parents showed toward the child based on observational measures of parent behavior during the in-home interview and assessment at 24 months of age (see Box V.1). Early Head Start had a positive impact on emotional responsivity toward the child at 24 months of age, as observed by the interviewer during the in-home parent interview (see Table V.1). Parents in Early Head Start programs were more likely to praise their child and express warmth and affection toward their child during the interview. Early Head Start programs also had a positive impact on parents' supportiveness during parent-child structured play. In contrast with control-group parents, parents in Early Head Start programs were more likely to show enjoyment of the child, sensitivity to the child's needs, and an effort to extend play to stimulate cognitive and language development as they played with their children.

b. Parent Stimulation of Language and Learning

Early Head Start had positive impacts on many aspects of parent stimulation of language and learning by the 24-month assessment point (see Box V.2 and Table V.2). Parents participating in Early Head Start were more likely than control group parents to structure the home environment to encourage cognitive and language development. They were more likely to have a variety of developmentally stimulating toys and materials in the home for the child to use (measured by the support of cognitive, language, and literacy environment of the HOME scale). They were more likely to structure the child's day by setting a regular bedtime for the child. However, there was no difference between Early Head Start and control-group parents in establishing regular bedtime routines such as reading stories, kissing good-night, or other activities that parents and children would do regularly at bedtime.

BOX V.1

MEASURES OF EMOTIONAL SUPPORT

Home Observation for Measurement of the Environment (HOME) – measures the quality of stimulation and support available to a child in the home environment (Bradley and Caldwell 1984). Information needed to score the inventory is obtained through a combination of interview and observation conducted in the home with the child's parent while the child is present. We used the Infant version of the HOME inventory at the 24-month assessment. The HOME Infant version includes 45 items. We derived four subscales from this assessment, with one related to emotional support:

> ***Emotional Responsivity*** – Measures responsive and supportive parenting behavior observed by the interviewer during the home visit. Items in this subscale are based entirely on interviewer observations of the parent and child during the interview, and include such items as whether the mother praised the child, whether she expressed warmth and affection toward the child, and whether she responded verbally to the child's verbalizations during the interview. Scores can range from 0, if none of the positive behaviors were observed, to 7, if all of the behaviors were observed.

Parent Behavior during Parent-Child Structured Play – measures the parent's behavior with the child during a structured play task. The parent and child were given three bags of interesting toys and asked to play with the toys in sequence. The structured play task was videotaped, and child and parent behaviors were coded by child development researchers according to strict protocols (see Appendix C). This assessment was originally used in the NICHD Study of Early Child Care (NICHD Early Child Care Research Network 1999). Four aspects of the parent's behavior with the child were rated on a seven-point scale, with one aspect related to emotional support:

> ***Supportiveness*** – this composite measure is an average of parental sensitivity, cognitive stimulation, and positive regard during play with the child. *Sensitivity* includes such behavior as acknowledgement of the child's affect, vocalizations, and activity; facilitating the child's play; changing the pace of play when the child seems under-stimulated or over-excited; and demonstrating developmentally appropriate expectations of behavior. *Cognitive stimulation* involves taking advantage of the activities and toys to facilitate learning, development, and achievement; for example, by encouraging the child to talk about the materials, by encouraging play in ways that illustrate or teach concepts such as colors or sizes, and by using language to label the child's experiences or actions, to ask questions about the toys, to present activities in an organized series of steps, and to elaborate on the pictures in books or unique attributes of objects. *Positive regard* includes praising the child, smiling or laughing with the child, expressing affection, showing empathy for the child's distress, and showing clear enjoyment of the child.

TABLE V.1

IMPACTS ON EMOTIONAL SUPPORT

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Home Observation for Measurement of the Environment (HOME): Emotional Responsivity[e]	6.2	6.1	.1*	8.1
Parent-Child Structured Play: Supportiveness[f]	4.1	3.9	.1**	13.5
Sample Size				
Parent Interview	**1,092**	**1,021**	**2,113**	
Parent-Child Interactions	**913**	**819**	**1,732**	

SOURCE: Parent interviews and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[e] Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor.

[f] Behaviors are observed during the videotaped parent-child structured play task and coded on a seven-point scale.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

BOX V.2

MEASURES OF PARENT STIMULATION OF LANGUAGE AND LEARNING

Home Observation for Measurement of the Environment (HOME) – measures the quality of stimulation and support available to a child in the home environment (Bradley and Caldwell 1984). Information needed to score the inventory is obtained through a combination of interview and observation conducted in the home with the child's parent while the child is present. We used the Infant version of the HOME inventory at the 24-month assessment. The HOME Infant version includes 45 items. We derived four subscales from this assessment, with two related to parent stimulation of language and learning, as well as the Total Score:

> ***Total Score*** – measures the cognitive stimulation and emotional support provided by the parent in the home environment. The total includes all 31 items used in the four subscales. The maximum potential score is 31.
>
> ***Support of Cognitive, Language and Literacy Environment*** – measures the provision of a variety of developmentally stimulating toys and furnishings, as well as whether the parent provides toys for the child during the visit, reads to the child several times per week, and talks to the child while doing household chores. Items are obtained by a combination of parent report and interviewer observation. The maximum potential score is 12, for homes in which all types of toys and furnishings are present and the parent provides toys for the child during the visit and reports reading and talking to the child during play.
>
> ***Maternal Verbal-Social Skills*** – measures the parent's ability to speak freely and clearly to the interviewer. Items in this subscale are based entirely on interviewer observations of the parent during the interview. The maximum potential score is 3.

Regular Bedtime – measures whether the parent has a regular bedtime for the child. The parent must name the time and report that the child went to bed at that time at least four of the past five weekdays.

Regular Bedtime Routines – measures whether the parent reports having a regular set of routines with the child around bedtime, such as singing lullabies, putting toys away, or telling stories.

Parent-Child Activities – measures the frequency with which the parent engages in several activities with the child that can stimulate cognitive and language development, including reading or telling stories, dancing, singing, and playing outside together.

Read Every Day – measures whether the parent reported that she reads to the child "every day" or "more than once a day."

Read at Bedtime – measures whether the parent reported that the child has a regular bedtime routine and, in response to an open-ended question about activities that are part of that routine, the parent reported that reading is one of the routine activities.

TABLE V.2

IMPACTS ON THE HOME ENVIRONMENT AND STIMULATION OF LANGUAGE AND LEARNING

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Home Observation for Measurement of the Environment (HOME) – Total Score	26.5	26.1	.4**	9.8
STRUCTURING THE ENVIRONMENT				
HOME: Support of Cognitive, Language, and Literacy Environment	10.3	10.1	.2***	11.5
Percentage of Parents Who Set a Regular Bedtime for Child	61.6	55.8	5.9**	11.8
Percentage of Parents and Children Who Have Regular Bedtime Routines	69.0	66.7	2.2	4.7
PARENT-CHILD ACTIVITIES				
Parent-Child Activities	4.6	4.5	0.1**	11.7
Percentage of Parents Who Read to Child Every Day	57.9	52.3	5.6**	11.3
Percentage of Parents Who Read to Child at Bedtime	29.4	22.6	6.8***	16.0
PARENT'S VERBAL-SOCIAL SKILLS				
HOME: Maternal Verbal-Social Skills[e]	2.8	2.7	.1	6.8
Sample Size				
Parent Interview	**1,092**	**1,021**	**2,113**	
Parent-Child Interactions	**913**	**819**	**1,732**	

SOURCE: Parent interviews, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[e] Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

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Early Head Start parents also reported that they more frequently engaged in activities with the child that stimulate cognitive and language development. Parents participating in Early Head Start had higher average scores on a composite scale measuring the frequency of several parent-child activities, including singing nursery rhymes or songs, dancing, telling stories, or reading stories. In addition, because of the special emphasis placed by early childhood educators and pediatricians on reading to children, we looked specifically at parents' reports of the frequency of reading to their children. Early Head Start parents reported that they read stories to their children more frequently than did parents in the control group. A larger proportion of Early Head Start parents than control-group parents reported that they read to the child every day. In addition, a larger proportion of Early Head Start parents than control-group parents volunteered in response to an open-ended question that reading stories to the child was part of their regular bedtime routine.

Verbal and social skills may be important for parents to model for children. Early Head Start parents were rated by the interviewers as having verbal-social skills during the parent interview that were similar to those of control group parents at the 24-month assessment point.

c. Parent Insensitivity, Hostility, and Punitiveness

In addition to increasing the levels of positive parenting behavior, Early Head Start also moderately reduced the average levels of some negative parenting behaviors, including detachment during a structured play situation and reported levels of spanking (see Box V.3). This was true even though, in the absence of the Early Head Start intervention, average levels of negative parenting behavior during the parent-child structured play situation were relatively low (average scores in the control group for detachment, intrusiveness, and negative regard were 1.5, 1.5, and 1.9, respectively, out of a possible maximum of 7) (see Table V.3). Similarly, overall levels of punitive interactions observed during the interview (shouting at or slapping the

BOX V.3

MEASURES OF NEGATIVE PARENTING BEHAVIOR

Parent Behavior during Parent-Child Structured Play – measures the parent's behavior with the child during a structured play task. The parent and child were given three bags of interesting toys and asked to play with the toys in sequence. The structured play task was videotaped, and child and parent behaviors were coded by child development researchers according to strict protocols (see Appendix C). This assessment was originally used in the NICHD Study of Early Child Care (NICHD Early Child Care Research Network 1999). Four aspects of the parent's behavior with the child were rated on a seven-point scale, with three related to negative parenting behavior:

> ***Detachment*** – measures the extent to which the parent is inattentive to the child, inconsistently attentive, or interacts with the child in an indifferent manner. Higher scores on detachment indicate that the parent showed flat affect, rarely made eye contact with or talked to the child, did not respond to the child's vocalizations or bids for attention, and did not try to engage the child with the new toys.
>
> ***Intrusiveness*** – measures the extent to which the parent exerts control over the child. Higher scores on intrusiveness indicate that the parent controlled the play agenda, not allowing the child to influence the focus or pace of play, grabbing toys away from the child, not taking turns in play with the child, and persisting with or even escalating an action that the child clearly wishes would stop.
>
> ***Negative Regard*** – measures the parent's expression of discontent with, anger toward, disapproval of, or rejection of the child. High scores on negative regard indicate that the parent used a disapproving or negative tone, showed frustration, anger, physical roughness, or harshness toward the child, threatened the child for failing at a task or not playing the way the parent desired, or belittled the child.

Home Observation for Measurement of the Environment (HOME) – measures the quality of stimulation and support available to a child in the home environment (Bradley and Caldwell 1984). Information needed to score the inventory is obtained through a combination of interview and observation conducted in the home with the child's parent while the child is present. We used the Infant version of the HOME inventory at the 24-month assessment. The HOME Infant version includes 45 items. We derived four subscales from this assessment, with one related to negative parenting:

Absence of Punitive Interactions – measures harsh or punitive parenting behavior observed during the home interview. Items in this subscale are based entirely on interviewer observations of the parent and child during the interview, and include such items as shouting at the child, expressing annoyance or hostility toward the child, hitting, scolding, or restricting the child. Items are scored 1 if the parent did not engage in particular harsh or punitive behaviors during the 2-hour home visit, so in contrast to the other measures of negative parenting behavior, higher scores on this outcome measure imply less negative parenting behavior.

Spanked Child in Previous Week – measures parent's report that she used physical punishment in the previous week by spanking the child.

TABLE V.3

IMPACTS ON NEGATIVE PARENTING BEHAVIOR IN STRUCTURED PLAY AND INTERACTION

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
INSENSITIVITY				
Parent-Child Structured Play: Detachment[e]	1.4	1.5	-.1*	-10.4
Parent-Child Structured Play: Intrusiveness[e]	1.9	1.9	0	-3.0
HOSTILITY AND PUNISHMENT				
Parent-Child Structured Play: Negative Regard[e]	1.5	1.5	0	3.9
Home Observation for Measurement of the Environment (HOME): Absence of Punitive interactions[f]	4.4	4.4	-.1	-4.6
Percentage of Parents who Spanked the Child in the Previous Week	47.4	52.1	-4.7*	-9.4
Sample Size				
Parent Interview	**1,092**	**1,021**	**2,113**	
Parent-Child Interactions	**913**	**819**	**1,732**	

SOURCE: Parent interviews, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[e] Behaviors are observed during the videotaped parent-child structured play task and coded on a seven-point scale.

[f] Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

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child; expressing hostility or annoyance toward the child) were extremely low (this scale is scored for the absence of punitive interactions so the complete absence of punitive interactions would receive the maximum score of 5). At the same time, reported levels of spanking were high, as nearly half the parents reported that they spanked their 2-year-old child in the previous week.

We examined two types of insensitive parenting behavior, detachment and intrusiveness, both of which were measured during a structured, parent-child free play situation. Early Head Start parents showed lower levels of detachment, but there was no impact of Early Head Start on intrusiveness. Thus, Early Head Start parents were less likely than control-group parents to be inattentive or nonresponsive to the child during play, and less likely to interact with the child in an indifferent manner during play. However, Early Head Start and control-group parents were equally likely to be intrusive during the play situation, for example, by overwhelming the child with the pace of play, not allowing the child to handle toys he or she reaches for, or persisting in play that does not interest the child.

Average levels of hostility and punitive behavior were generally not changed by participation in Early Head Start, but reported levels of spanking were lower. Early Head Start had no impact on average levels of negative regard (expressions of anger toward child or rejection of child) exhibited by parents during parent-child structured play at 24 months of age. Similarly, Early Head Start had no impact on levels of punitive interactions (for example, shouting at the child, slapping or spanking the child, or scolding the child) observed by the interviewer during the in-home parent interview and assessment. However, while about half the parents reported that they spanked their toddler in the previous week, the proportion of Early Head Start parents who reported this action was lower by 5 percentage points. Programs may have emphasized that parents should avoid physical punishment, a practice that appears to be fairly common among families in the research sample. Because this is a measure based on parent report, the impact may represent a combination of success in changing behavior and a change in what parents are willing to report about their behavior.

2. Parenting Knowledge

One of the areas in which Early Head Start programs are expected to have an impact is on parenting knowledge, since all of the programs try to impart such information to parents through a variety of strategies. We expect that the parenting information focuses on at least three areas: (1) infant-toddler development and developmental milestones, (2) strategies for resolving common parent-child conflict situations, and (3) safety in the home. We assessed parent knowledge and home safety practices at the birthday-related interviews (see Box V.4).

Early Head Start had a modest positive impact on parents' knowledge of infant-toddler development and developmental milestones at the 24-month assessment point (see Table V.4). Early Head Start parents were more likely than control-group parents to know the typical behavior, language, and cognitive abilities of 2-year-old children.

In addition, research at the New York program site explored adolescent mothers' knowledge in some depth. The researchers show that there is considerable complexity in the nature and timing of these mothers' knowledge of infant/toddler development (Box V.5).

In the national study, Early Head Start parents were significantly more likely than control group parents to suggest positive and milder discipline strategies to respond to common parent-child conflict situations, such as the child having a temper tantrum in a public place. Early Head Start programs appeared not to have an impact overall in reducing the incidence of parents suggesting the use of such negative discipline strategies as shouting at the child, threatening the child, or using physical punishment (when presented with hypothetical situations). A larger proportion of Early Head Start parents than control parents at the 24-month assessment point

BOX V.4

MEASURES OF PARENTING KNOWLEDGE

Knowledge of Infant Development Inventory (KIDI) – measures the parent's knowledge of childrearing practices, developmental processes, and infant developmental norms and milestones (Benasich et al. 1997; Benasich and Brooks-Gunn 1996; MacPhee 1983). Each of the items is a statement, such as, "Most two-year-olds can tell the difference between a make-believe story on TV and a true one," and the parent is asked to respond whether she strongly agrees; agrees; disagrees; or strongly disagrees. A subset of eight items was used for the Early Head Start evaluation, selected from the 17 items used in the Infant Health and Development Program evaluation (Benasich et al. 1997). Items are coded on a 4-point scale indicating the average level of accuracy of responses to each statement.

Discipline Strategies – measures the parent's strategies for handling three different potential conflict situations with the child: (1) the child keeps playing with breakable things; (2) the child refuses to eat; and (3) the child throws a temper tantrum in a public place. Parents provided open-ended answers to how they would respond to each of the three situations, and these responses were classified into the types of discipline strategies, which were coded as binary variables. A parent received a "1" for each strategy that was ever mentioned. In addition, we created the following composite measures:

> ***Mild Discipline*** – binary variable indicates parents who mentioned only the following types of responses for each situation: prevent the situation; distract the child; talk to the child or explain the issue; ignore the behavior; or remove the child or object.
>
> ***Index of Severity of Discipline Strategies*** – measures the degree of harshness of discipline strategies suggested. An individual's score on this index ranges from 1 to 5, and is determined by the harshest strategy that was suggested in response to any of the three conflict situations. Thus, parents who said they would use physical punishment receive a 5; those who did not suggest physical punishment but did say they would shout at the child receive a 4; those whose harshest response was to threaten the child receive a 3; time-out, restricting the child, or bribing receive a 2; and only mild strategies (as listed above) receive a 1.

Safety Practices – measures whether the parent is using standard safety practices to prevent accidents or to be prepared for common emergencies with infants and toddlers. Practices include keeping syrup of ipecac in the home in case of poison emergencies, having gates or doors in front of stairs, riding in a car seat in the car, and having covers on electrical outlets.

TABLE V.4

IMPACTS ON PARENTING KNOWLEDGE: CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
KNOWLEDGE OF CHILD DEVELOPMENT				
Knowledge of Infant Development Inventory (KIDI)	3.4	3.3	0.1***	12.3
DISCIPLINE STRATEGIES				
Percentage of Parents Who Suggested Responses to Hypothetical Situations with Child:				
Prevent or Distract	72.9	66.8	6.1***	12.9
Remove Child or Object	80.4	81.5	-1.1	-2.9
Talk and Explain	37.2	31.1	6.1**	12.9
Threaten or Command	31.6	34.3	-2.7	-5.6
Shout	5.3	4.6	0.7	3.5
Physical Punishment	27.7	29.7	-2.0	-4.3
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Situations[e]	43.1	39.1	4.0*	8.2
Index of Severity of Discipline Strategies Suggested[f]	2.7	2.8	-0.1	-6.2
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[e] Parents were classified as suggesting only mild discipline if their responses to the three discipline situations include only the following: prevent or distract, remove child or object, or talk and explain.

[f] The Index of Severity of Discipline Strategies is based on a hierarchy of discipline practices from talk and explain or prevent/distract (1) through physical punishment (5). The most severe approach suggested is used to code this scale.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

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BOX V.5

LOW-INCOME ADOLESCENT MOTHERS' KNOWLEDGE ABOUT DOMAINS OF CHILD DEVELOPMENT

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Adolescent mothers have been shown to know less about children's development than older mothers, even when controlling for differences in socioeconomic factors. Although studies indicate that adolescent mothers may lack knowledge about child development, specific details about this lack of knowledge remain unclear. In the present investigation, we sought to characterize the nature of adolescent mothers' knowledge about child development in our Early Head Start site. We distinguished between two aspects of mothers' knowledge—knowledge about the relative *ordering* of developmental milestones versus knowledge about the developmental *timing* of milestones—as well as among five domains of child development: cognition, language, motor, play, and social development.

To this end, 59 first-time adolescent mothers of 32 boys and 17 girls, who represented a first wave of participants in our Early Head Start research evaluation study, participated in this study (age M = 16.62, SD = 1.15). Ten mothers were pregnant, 33 had children between 1 and 12 months of age, and 16 had children between 13 and 28 months of age. Participants were from diverse ethnic backgrounds. Demographic characteristics did not relate to maternal knowledge.

Mothers were asked to complete an age-based checklist of children's abilities in five developmental domains: cognition, language, motor skill, social development, and play. They were asked to estimate the ages (in months) at which the average child is first capable of performing each action within each of the five domains. Items on each of the five lists were primarily obtained from the Hawaii Early Learning Profile Checklist and the Bayley Scales of Infant Development.

Findings indicated that, as a group, mothers were highly accurate in their *ordering* of developmental abilities, although mothers' knowledge about the ordering of play and social abilities was significantly weaker than that of cognitive, language, and motor milestones.

To assess mothers' knowledge about the *timing* of abilities—that is, the ages at which children first exhibit each behavior—we calculated the percentages of mothers' estimates that were (1) within the age window, (2) underestimates (meaning they expected children to achieve milestones at ages earlier than norms), and (3) overestimates (meaning they expected children to achieve milestones at ages later than norms). Mothers' age estimates fell within the developmental window between 24 and 35 percent of the time. Across domains, mothers were more likely to under- than to overestimate onsets of abilities and were more accurate at estimating age onsets for earlier milestones than for those occurring after 12 months of age.

In summary, the adolescent mothers attending our Early Head Start program were generally knowledgeable about the *ordering* of developmental abilities but less aware of the *timing* of abilities. Mothers were better at estimating first-year abilities and cognitive, language, and motor development than they were at estimating play and social development. Adolescent mothers systematically *underestimated* the timing of later emerging abilities across all domains, expecting children to achieve most abilities within a short span of a few months, rather than appreciating the protracted course of children's developmental achievements. These findings have implications for Early Head Start interventions with mothers. Lack of knowledge about development can lead to unrealistic expectations of children, diminished efficacy in mothers, disappointment in children's abilities, or inappropriate parenting. Teaching adolescent parents about normative achievements across domains of development is important preparation for the task of parenting.

suggested taking steps to prevent the conflict situation from arising or else distracting the child once the situation occurs. When children were 24 months old, a larger proportion of Early Head Start parents than control parents suggested talking to the child or explaining the reason for complying with the parent. A larger proportion of Early Head Start parents than control parents suggested only mild strategies for addressing the parent-child conflict situations.

We found little evidence that the Early Head Start programs significantly influenced families' child safety practices, including preparedness in a poison emergency, covers or gates for stairs, windows, and electrical outlets, working smoke alarms, and the appropriate use of car seats (Table V.5). The Early Head Start programs had no significant impacts on safety practices that parents reported when children were 24 months of age. Moreover, the interviewer ratings of the safety of the child's play area were the same on average for both Early Head Start and control group families.

Although the national evaluation did not measure the more global construct of "parenting role competence," one of the local research teams examined the relationship between program participation and this general child-rearing ability. The findings are described in Box V.6.

D. VARIATIONS IN IMPACTS ON PARENTING BY PROGRAM APPROACH[2]

The Early Head Start programs adopted different approaches to providing child development services. At the time of our 1997 implementation visits to the 17 research programs, we found that four programs offered only center-based services to families; seven programs offered only home-based services; and six programs offered services of both types, which provided some flexibility in determining services that families would receive to best meet their needs. With

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[2] In this chapter, we present figures with the subgroup findings from the targeted analyses. For details of subgroup means, effect sizes, sample sizes, and the significance of the differences across subgroup impacts, see tables in Appendix E.V.

TABLE V.5

IMPACTS ON SAFETY PRACTICES
(Percentages)

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Family Has Syrup of Ipecac in the House in Case of a Poison Emergency	29.9	29.9	0	0
Parent/Guardian Has or Knows How to Find the Telephone Number For the Poison Control Center	37.9	36.1	1.8	3.7
Family Uses a Gate or Door at the Top of Stairs	79.6	81.2	-1.6	-4.1
Family Uses Guards or Gates For Windows	62.7	65.0	-2.3	-4.7
Family Has Covers on Electrical Outlets That Child Can Reach	60.2	61.1	-0.9	-1.9
Family's Homes Has Working Smoke Alarms	87.2	84.9	2.4	6.5
Family Uses a Car Seat For Child and it is in the Back Seat of the Car	80.7	82.1	-1.4	-3.6
Interviewer Observed That Child's Play Area is Safe	68.7	68.7	0.1	0.1
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews and interviewer observations conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

BOX V.6

EARLY HEAD START PARTICIPATION AND MOTHERS' PERCEPTIONS OF PARENTING ROLE COMPETENCE

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The United Cerebral Palsy Early Head Start site is located in a suburban Northern Virginia strip mall. To enhance child development in families struggling with poverty, Early Head Start provides individualized child care, parent role, and family development services in a comprehensive framework congruent with the resources and values of the local community. In collaboration with this program, researchers at the The Catholic University of America investigated mothers' perceptions of parenting role competence as a way to understand the relationship between Early Head Start participation and parent role development when their child is 24 months old.

A mother's perception of her competence as a parent is tied to her ability to rear a child. Specifically, the project hypothesized (1) that mothers' perceptions of their parenting role competence at 24 months may differ significantly between families enrolled in Early Head Start and those in the control group; and (2) that this difference may be influenced by mothers' birth status (being U.S.-born or immigrant), age, education, English-speaking adequacy, employment, resilience, family income, and adequacy of family resources. Mothers' perception of parenting role competence at 24 months was measured by a single 5-point-scaled question about what kind of a parent she thought she was.

Of the 149 families who applied for services, 75 were randomly assigned to the Early Head Start program and 74 to the control group. Of this total, 52 Early Head Start and 52 control group families had children 24 months old and were included in this study. The program and control group families shared similar demographics, except that the program group contained slightly more immigrant families.

In comparing mothers' parenting role competence when their child turned 24 months, chi square analysis revealed that Early Head Start mothers modestly but significantly differed from control group mothers (104; X^2 8.0, df 3, p .05, Phi .28). Specifically, 87 percent of Early Head Start mothers perceived their role competence as that of a better-than-average parent; 13 percent, as that of an average parent. In contrast, 63 percent of control group mothers perceived their role competence as that of a better than average parent; 37 percent as that of an average to below-average parent.

Bivariate correlational analyses were conducted to prepare for exploring the interactive effects of the baseline variables mentioned above and the targeted main effect of Early Head Start participation on mothers' perceived parenting role competence These analyses yielded two significant, albeit weak, relationships between mothers' parenting role competence and mothers' baseline birth status ($r = .18$, $p = .07$) and employment ($r = .19$, $p = .05$). Inclusion of these two correlates with Early Head Start participation in stepwise multiple regression analysis revealed that Early Head Start participation is the most important contributor (Beta = -.27, $t = -2.8$, $p = .006$) to the prediction of mothers' 24-month parenting role competence ($N = 104$, $F = 7.86$, $df = 103$, $p = .006$), and accounts for 7 percent of the variance ($R^2 = .07$).

In conclusion, this investigation demonstrated that mothers' participation in Early Head Start was mildly positively associated with mothers' perceptions of parenting role competence.

some exceptions, which we note in the following discussion, Early Head Start programs' impacts on parenting behavior and knowledge were concentrated in the home-based and mixed-approach programs.

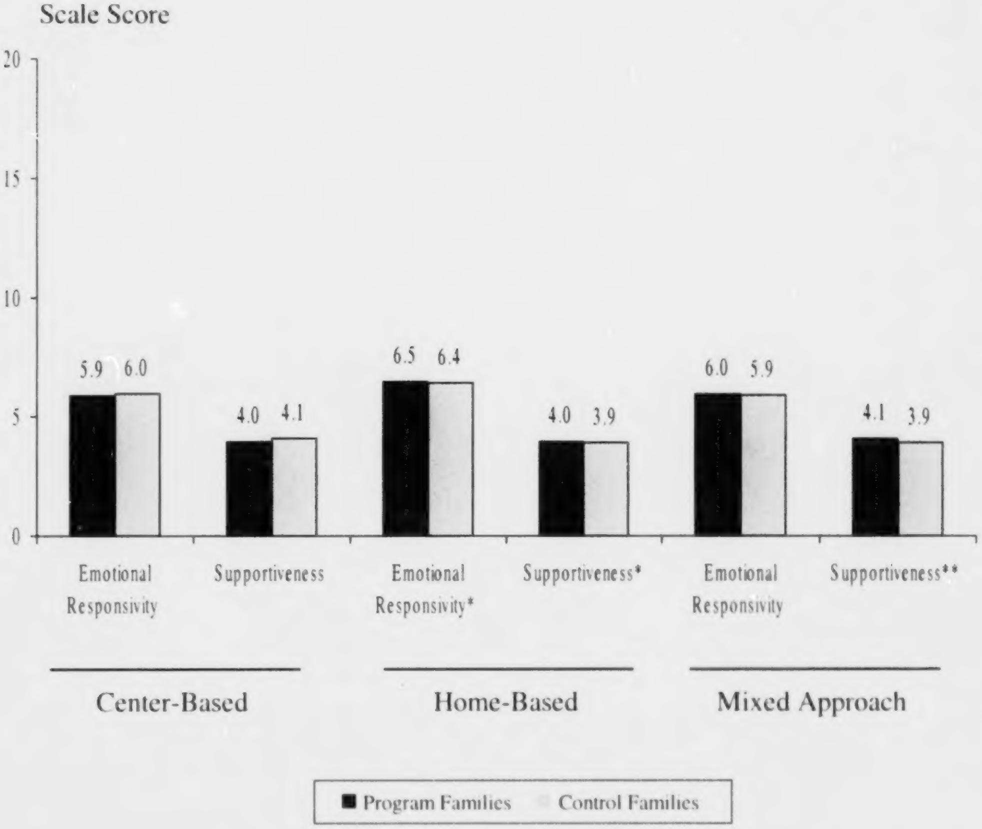
1. Parenting Behavior and the Home Environment

Home-based and mixed Early Head Start programs had positive, statistically significant impacts on emotional support for the child at 24 months of age. Parents in home-based Early Head Start programs showed greater emotional responsivity as observed by the interviewer during the in-home interview, and greater supportiveness during parent-child structured play, than parents in the control group (see Figure V.1). Parents in mixed-approach Early Head Start programs also were more supportive of their toddler during parent-child structured play than parents in the control group, but there was no difference between mixed-approach Early Head Start and control group parents in emotional responsivity observed during the interview. The center-based Early Head Start programs had no impacts on parents' supportiveness or emotional responsivity at 24 months of age.

Mixed-approach and home-based Early Head Start programs had positive impacts on several aspects of parents' stimulation of language and learning when children were 24 months old (see Figure V.2). Parents in mixed-approach programs showed greater support for the cognitive, language, and literacy environment of the home and had higher total scores on the HOME scale. Parents in mixed-approach Early Head Start programs more frequently engaged in developmentally stimulating parent-child activities at 24 months of age and were more likely to read to the child every day. Parents in home-based Early Head Start programs showed greater support for the cognitive, language, and literacy environment of the home at 24 months of age and had higher total scores on the HOME scale than did parents in the control group. Parents in home-based Early Head Start programs were also more likely to read to the child at bedtime than

FIGURE V.1

IMPACTS PER PARTICIPANT ON EMOTIONAL SUPPORT OF THE CHILD, BY PROGRAM APPROACH



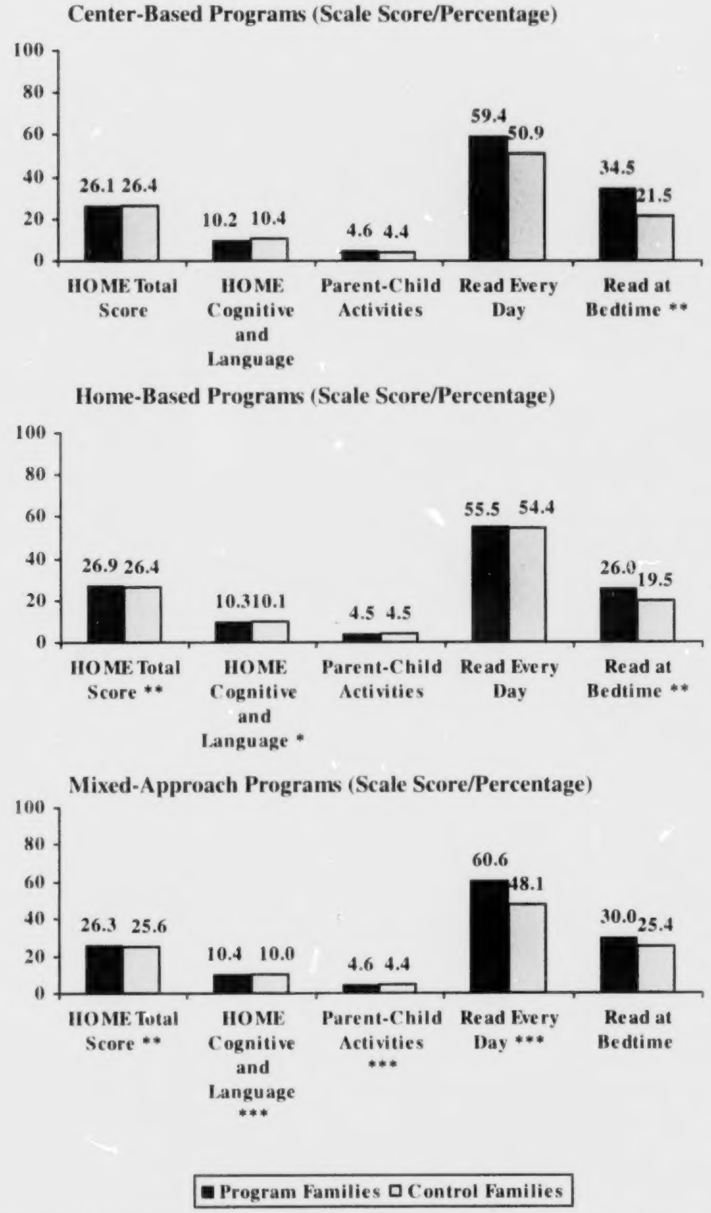
Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE V.2

IMPACTS PER PARTICIPANT ON PARENT STIMULATION OF LANGUAGE AND LEARNING, BY PROGRAM APPROACH



Center-Based Programs (Scale Score/Percentage)

Home-Based Programs (Scale Score/Percentage)

Mixed-Approach Programs (Scale Score/Percentage)

Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

were parents in the control group, but there were no differences in the proportion reading every day or in scores on the frequency of parent-child activities. Center-based Early Head Start programs had few impacts on parent stimulation of language and learning, but parents in center-based programs were more likely than control-group parents to read to the child at bedtime.

Early Head Start had few impacts on negative parenting behavior by program approach (see Figure V.3). Parents in mixed-approach and home-based Early Head Start programs were less detached or unresponsive to the toddler during the parent-child structured play assessment than were parents in the control group. There were no other impacts on negative behavior during structured play or as observed by the interviewer for any of the program-approach subgroups.

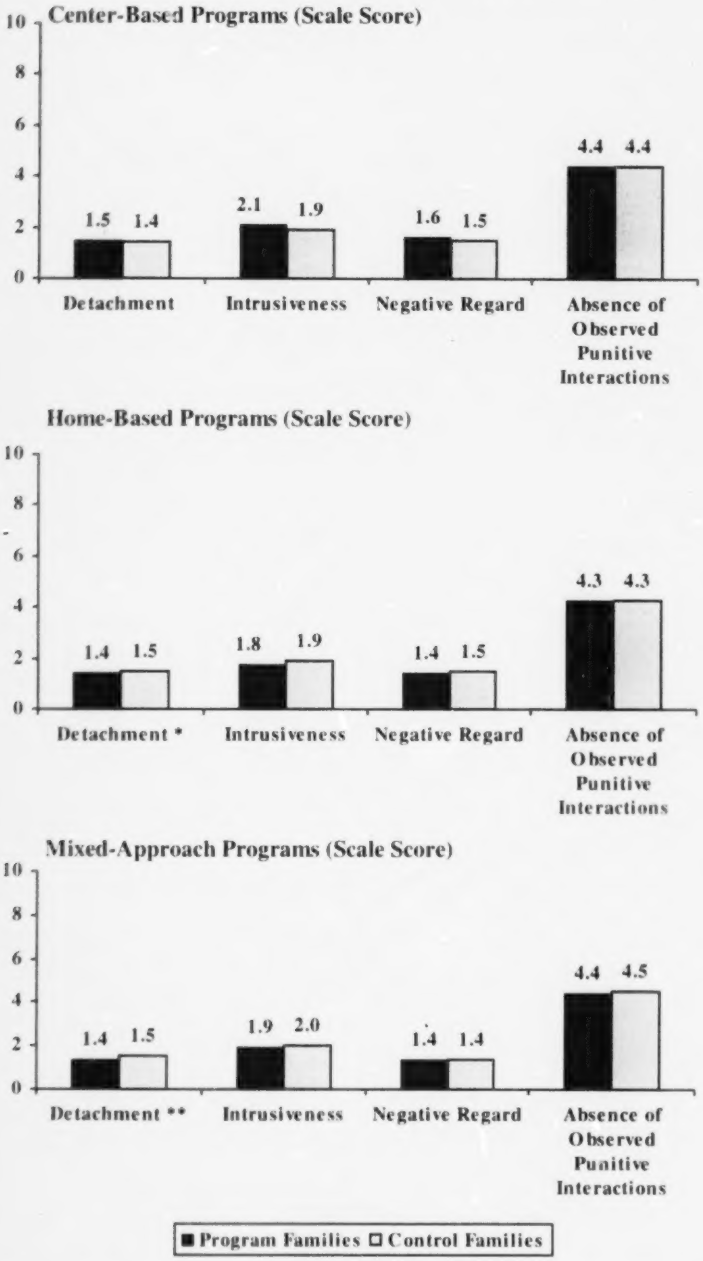
2. Parenting Knowledge

Early Head Start parents in home-based programs and mixed-approach programs scored higher than control-group parents on the Knowledge of Infant Development Inventory at 24 months (see Figure V.4). Early Head Start had no impact on the scores on this brief child development knowledge assessment for parents in center-based programs.

Parents in center-based and mixed-approach Early Head Start programs were more likely than control-group parents to suggest positive discipline strategies and less likely to suggest harsh or punitive approaches to address common parent-child conflict situations, such as the child having a temper tantrum in a public place (see Figure V.4). Early Head Start parents in center-based programs were more likely than control-group parents to suggest preventing the incident or distracting the child; and they were less likely to suggest using threats or commands to address the situation. Parents in mixed-approach programs were more likely than control-group parents to suggest talking to the child and explaining the issue at the 24-month followup (not shown) and they were less likely to suggest using physical discipline. Parents in home-

FIGURE V.3

IMPACTS PER PARTICIPANT ON NEGATIVE PARENTING BEHAVIOR, BY PROGRAM APPROACH



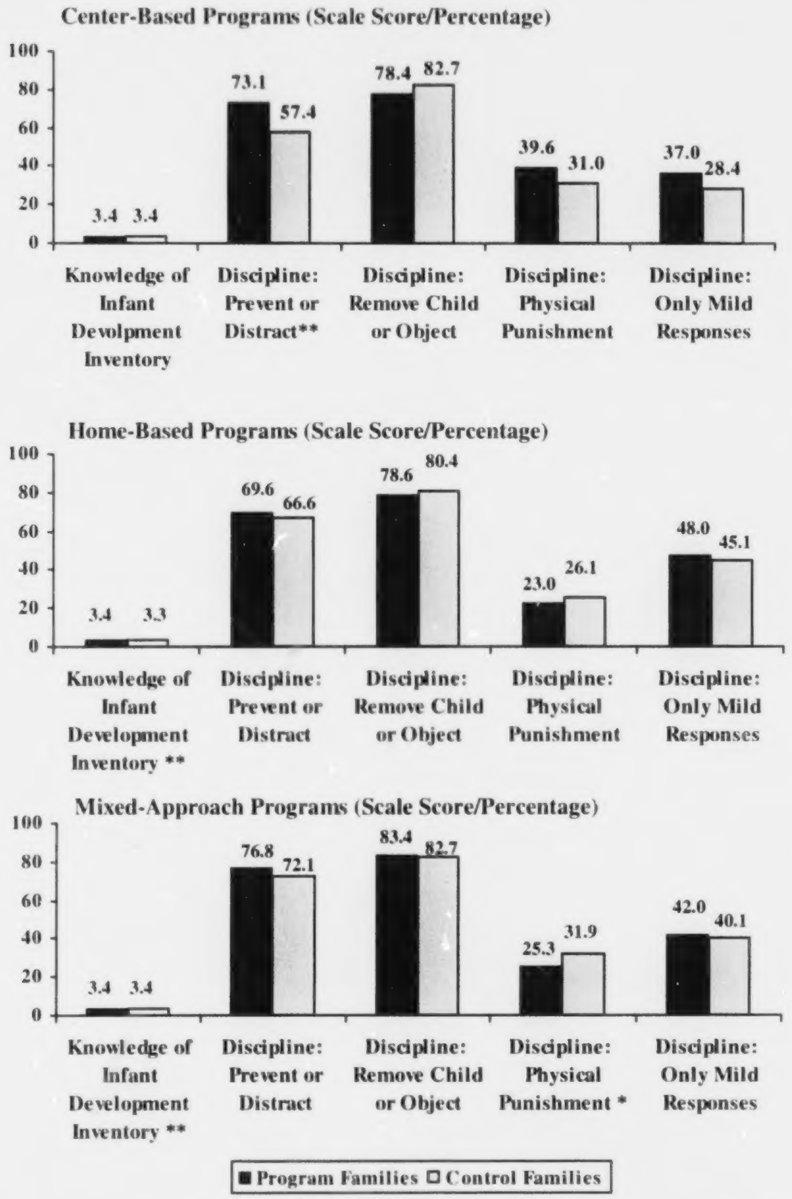
Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE V.4

IMPACTS PER PARTICIPANT ON KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES, BY PROGRAM APPROACH



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

based programs were more likely to suggest talking to the child or explaining the issue than were control-group parents, but there were no differences between these groups in the use of harsh or punitive approaches.

E. VARIATIONS IN IMPACTS ON PARENTING BY PROGRAM IMPLEMENTATION

As part of the implementation study, Early Head Start programs were rated on their overall implementation of the major program elements in both fall 1997 and fall 1999. Six programs were rated as fully implemented in fall 1997 (early implementers), six programs were not rated as fully implemented in fall 1997 but were rated as fully implemented overall in fall 1999 (later implementers), and five programs were not rated as fully implemented at either time (incomplete implementers). These latter programs either emphasized family support or faced difficult implementation challenges, such as early staff turnover in leadership positions or partnerships that did not work out well.

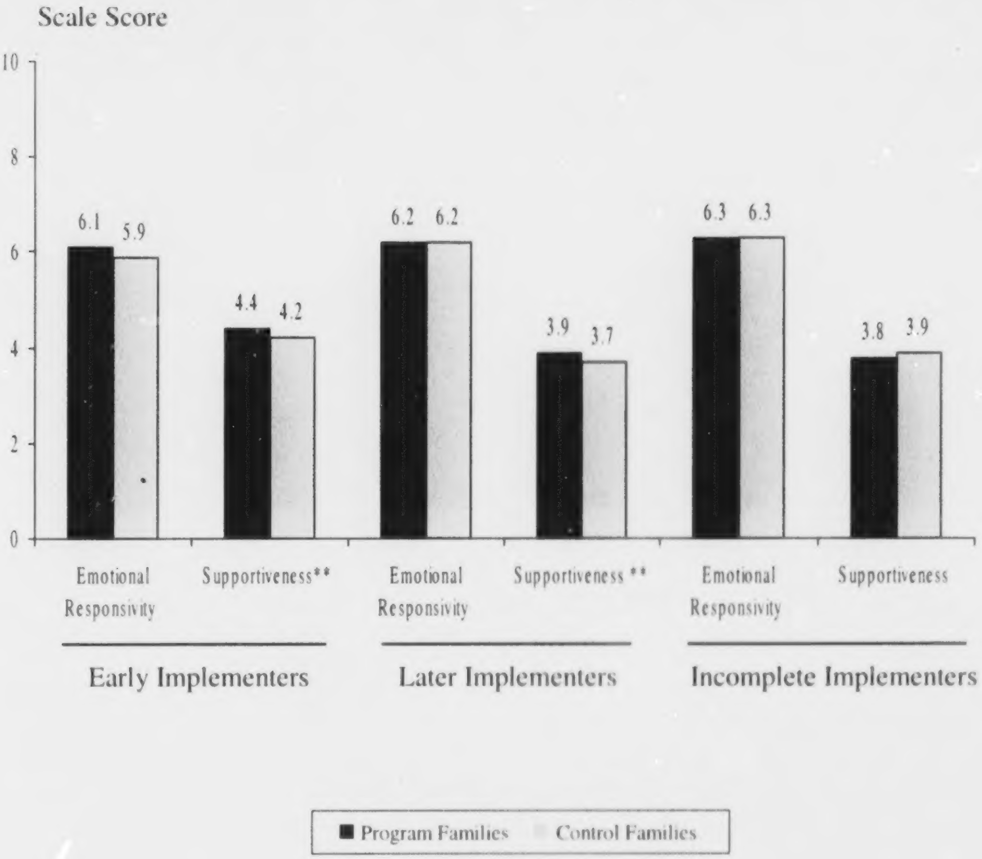
In this section, we discuss how Early Head Start impacts on parenting behavior and parenting knowledge varied by the level and timing of implementation. To preview the findings, implementation appears to be related to the pattern of impacts on parenting outcomes. Programs that were implemented early and sustained their implementation over time had a pattern of positive impacts on many aspects of parenting, while programs that were implemented in only one period or were incomplete implementers had few impacts on parenting outcomes.

1. Parenting Behavior and the Home Environment

Early Head Start programs that were implemented early had positive impacts on parents' supportiveness in the parent-child structured play assessment at the 24-month followup, but not on the interviewer's rating of emotional responsivity observed during the Parent Interview (see Figure V.5). Early Head Start programs that were implemented later also had a positive impact

FIGURE V.5

IMPACTS PER PARTICIPANT ON EMOTIONAL SUPPORT OF THE CHILD, BY PATTERN OF IMPLEMENTATION



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

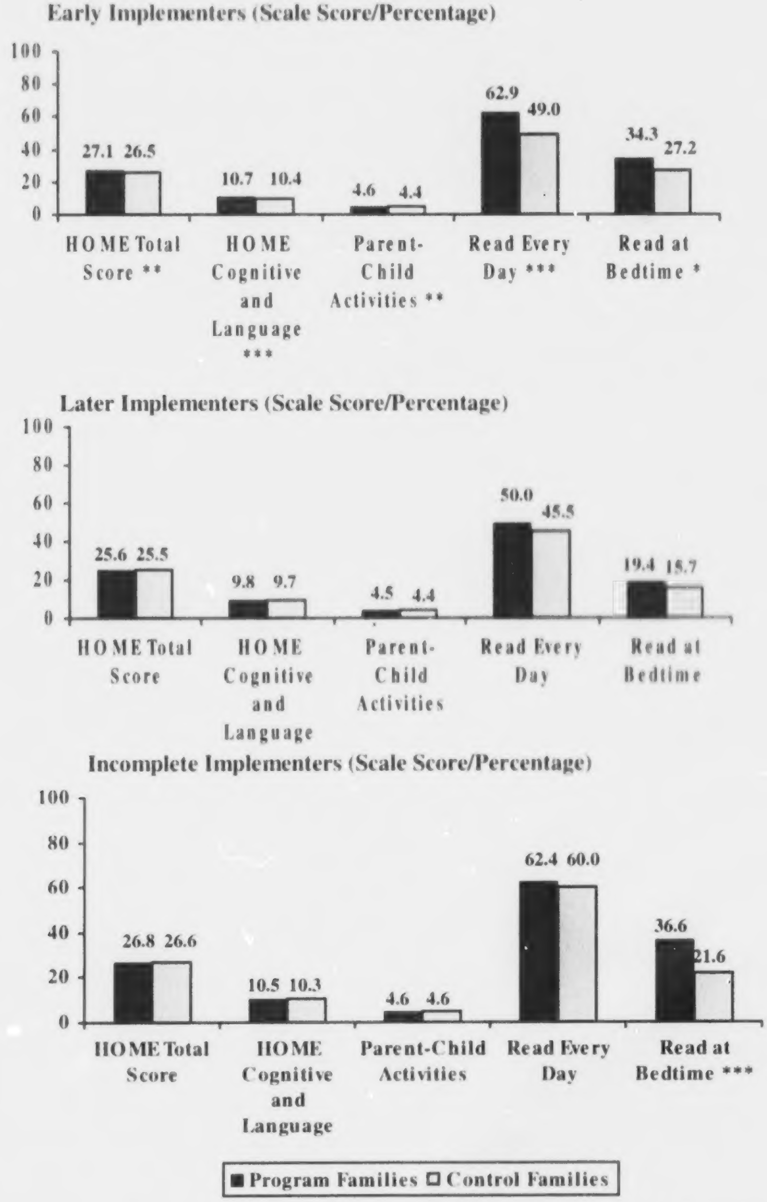
on supportiveness in the parent-child structured play assessment, but also no impact on emotional responsivity. Early Head Start programs that were incomplete implementers had no impacts on either measure of emotional support for the child.

Early Head Start programs that were implemented early had positive impacts on several important aspects of parental stimulation of language and learning at 24 months of age (see Figure V.6). Parents in Early Head Start programs that were implemented early had higher total scores on the HOME scale and on their support for the cognitive, language, and literacy environment of the home. Parents in early-implemented programs had higher scores on the composite scale measuring the frequency of developmentally stimulating parent-child activities. Parents in Early Head Start programs that were implemented early were more likely to read to the toddler every day and to read stories as part of the child's bedtime routine. Early Head Start programs that were implemented later had no impacts on measures of the parent's stimulation of language and learning. Early Head Start programs that were incomplete implementers had a positive impact on the proportion of parents who read to the toddler as part of the child's bedtime routine, but no impacts on other aspects of the parent's stimulation of language and learning.

Early Head Start had few impacts on negative parenting behavior at the 24-month assessment by the timing and level of implementation (see Figure V.7). Parents in Early Head Start programs that were implemented early or implemented later were less detached or unresponsive to the toddler during the parent-child structured play assessment than were parents in the control group. There were no other impacts on negative behavior during structured play or as observed by the interviewer for any of the program implementation subgroups.

FIGURE V.6

IMPACTS PER PARTICIPANT ON PARENT STIMULATION OF LANGUAGE AND LEARNING, BY PATTERN OF IMPLEMENTATION



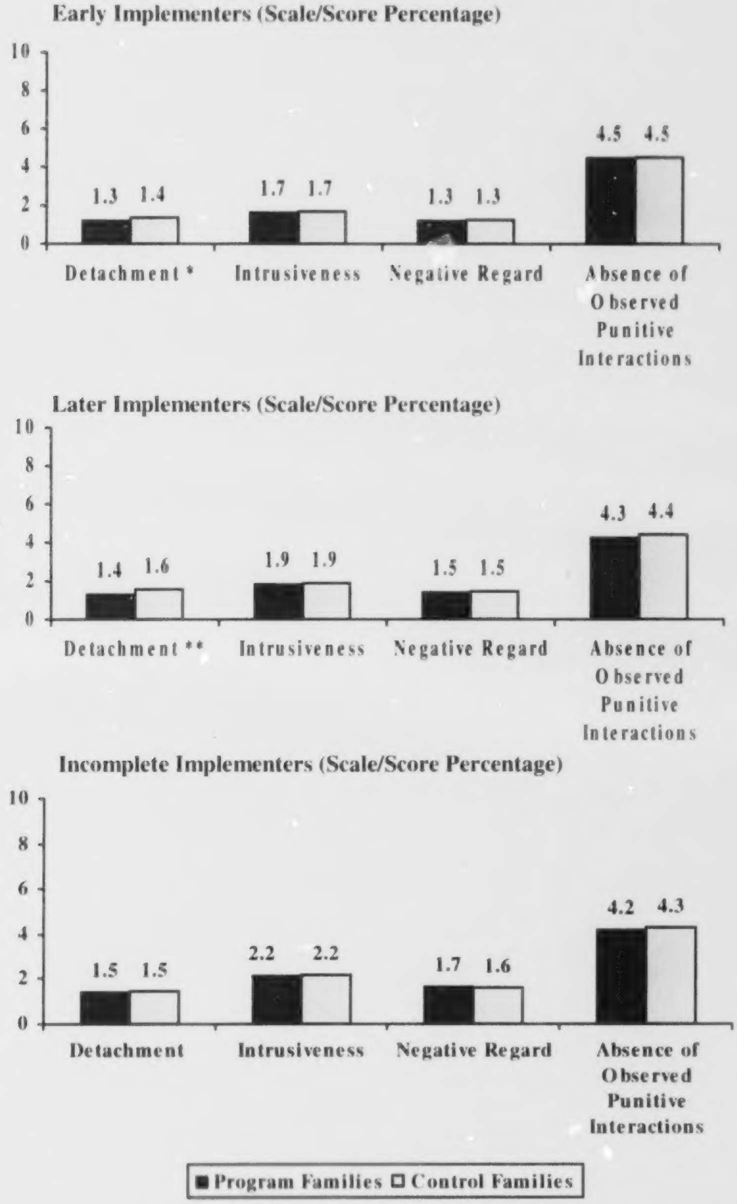
Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE V.7

IMPACTS PER PARTICIPANT ON NEGATIVE PARENTING BEHAVIOR, BY PATTERN OF IMPLEMENTATION



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

2. Parenting Knowledge

Early Head Start programs that were later implementers had a statistically significant, positive impact on parents' knowledge of infant-toddler development at 24 months of age (see Figure V.8). Early Head Start programs that were implemented early and those that were incomplete implementers had no impact on parents' scores on this short assessment of child development knowledge at 24 months.

Early Head Start programs that were implemented early had positive impacts on the types of discipline strategies that parents proposed in response to the hypothetical parent-toddler conflict situations (see Figure V.8). Early Head Start parents in programs that were implemented early were more likely than parents in the control group to propose positive discipline strategies, such as preventing the situation, distracting the child, or talking to the child and explaining the issue. Early Head Start parents in these programs were less likely than parents in the control group to propose harsh or punitive responses, such as threats, commands, or physical punishment. Early Head Start programs that were later implementers had few impacts on parents' suggested discipline strategies. Parents in later-implemented programs were more likely than parents in the control group to suggest talking to the child or explaining the issue, but there was no difference between these groups in the proportion suggesting harsh or punitive strategies. Early Head Start programs that were incomplete implementers had no impacts on parents' discipline strategies at the 24-month assessment point.

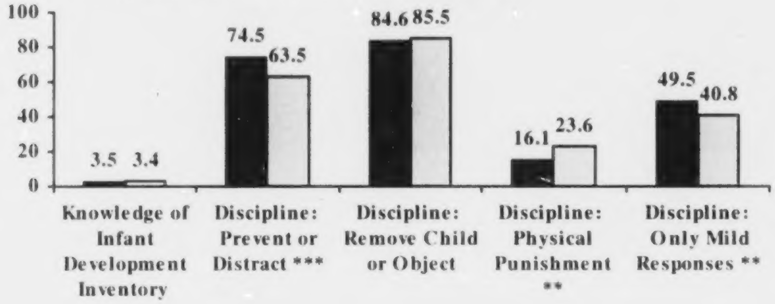
F. VARIATIONS IN PARENTING OUTCOMES BY WELFARE-RELATED WORK REQUIREMENTS

Characteristics of the communities in which the Early Head Start programs operate may make it more challenging for programs to serve families or may influence the level and types of services families in the control group receive. In about 40 percent of the communities with an

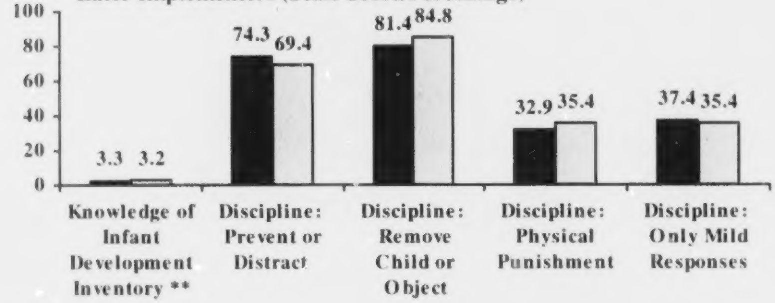
FIGURE V.8

IMPACTS PER PARTICIPANT ON KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES, BY PATTERN OF IMPLEMENTATION

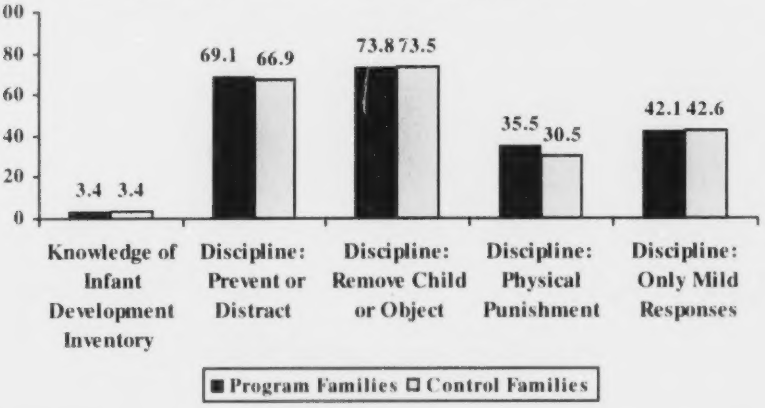
Early Implementers (Scale Score/Percentage)



Later Implementers (Scale Score/Percentage)



Incomplete Implementers (Scale Score/Percentage)



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

Early Head Start research program, parents receiving welfare were required to work when their children were under 12 month of age (although most of these communities exempted parents from work if the child was under 3 months old). Early Head Start programs in these communities may face the challenge of helping parents navigate welfare-related work requirements and find good-quality child care, tasks which may take time away from parenting education and supporting parents' efforts to build relationships with their children.

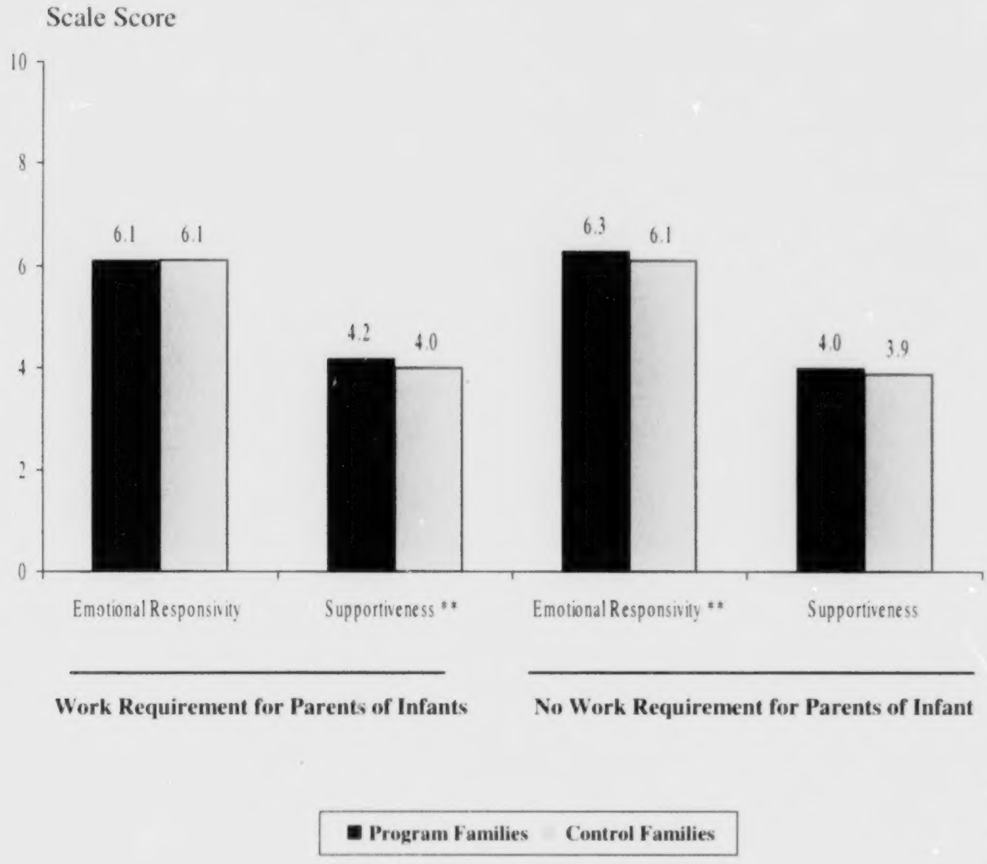
The pattern of Early Head Start impacts on parenting behavior and knowledge in sites with and without welfare-related work requirements for parents of infants is mixed. In general, programs in locations without work requirements had most of their impacts in the area of stimulation of language and learning. In sites where work was required while children were still under 12 months of age, impacts tended to be concentrated in knowledge of child development and discipline. The specific patterns are shown in Figures V.9 through V.12. As we discussed in the previous chapter, programs chose to provide an array of services designed to meet the needs of families in their particular community context. In the two subgroups of sites defined by the welfare-related work requirements, Early Head Start programs had important impacts on parenting, although on different aspects of parenting.

Early Head Start programs in sites with work requirements had a positive impact on the parents' supportiveness in the parent-child structured play situation, but not on emotional responsivity as rated by the interviewer based on the parent's behavior during the HOME interview (see Figure V.9). For Early Head Start programs in sites without a work requirement for parents of infants, the reverse was true.

Early Head Start programs in sites with a work requirement for parents of infants had positive impacts on reading to the child (see Figure V.10), but not on other measures of parent

FIGURE V.9

IMPACTS PER PARTICIPANT ON EMOTIONAL SUPPORT OF THE CHILD, BY WELFARE-RELATED WORK REQUIREMENTS



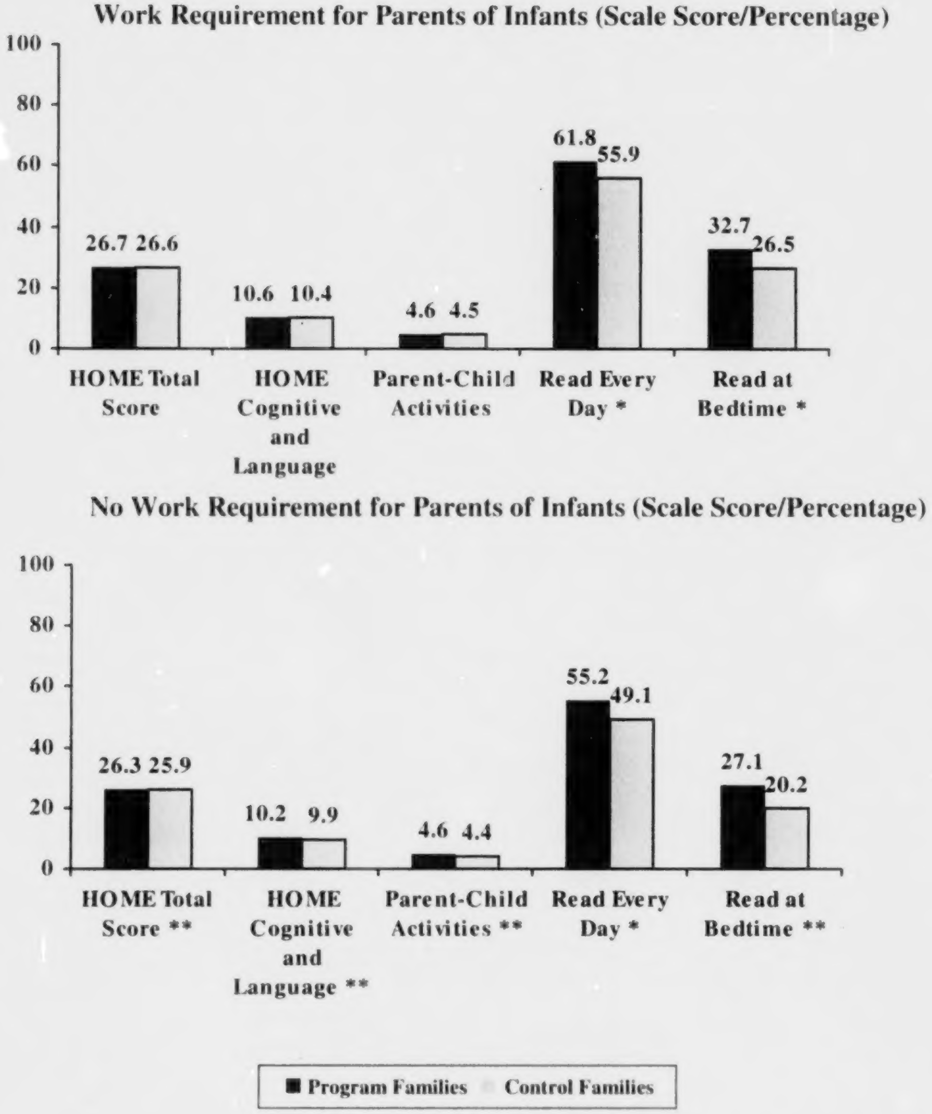
Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE V.10

IMPACTS PER PARTICIPANT ON PARENT STIMULATION OF LANGUAGE AND LEARNING, BY WELFARE-RELATED WORK REQUIREMENTS



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

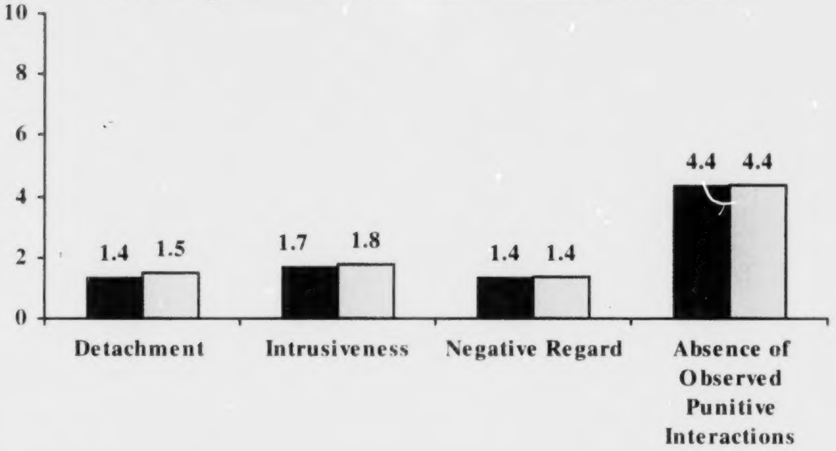
Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

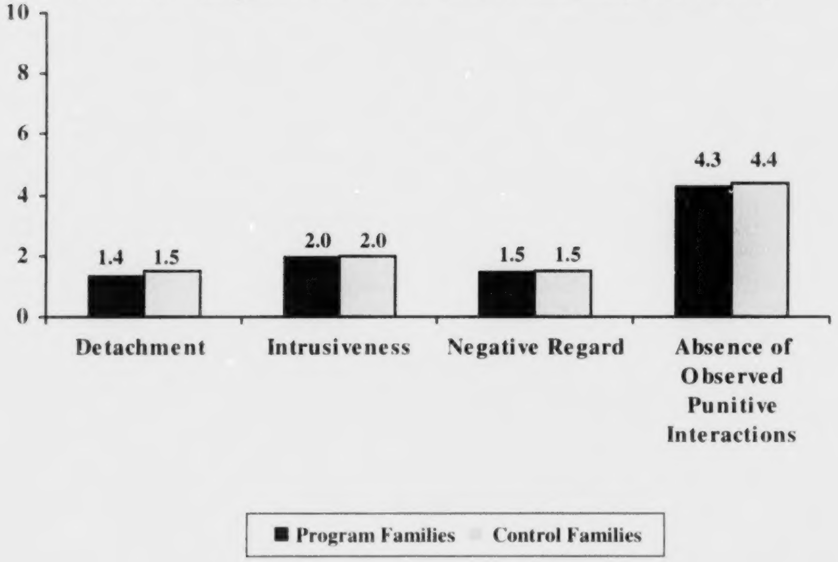
FIGURE V.11

IMPACTS PER PARTICIPANT ON NEGATIVE PARENTING BEHAVIOR, BY WELFARE-RELATED WORK REQUIREMENTS

Work Requirement for Parents of Infants (Scale Score)



No Work Requirement for Parents of Infants (Scale Score)



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

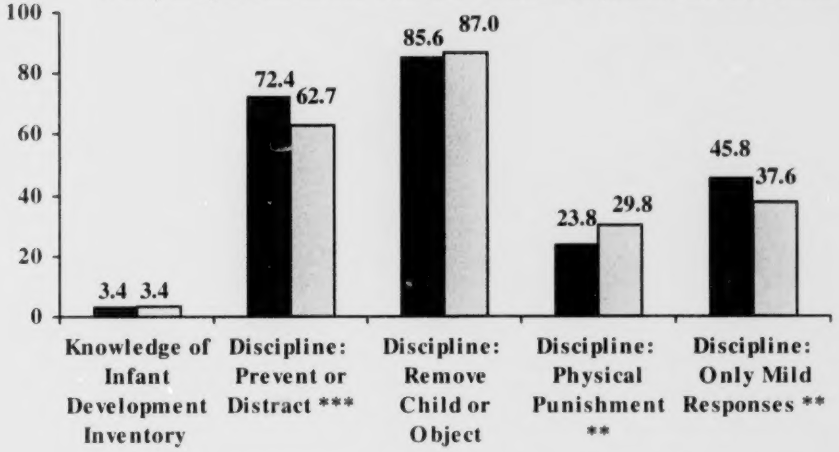
Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

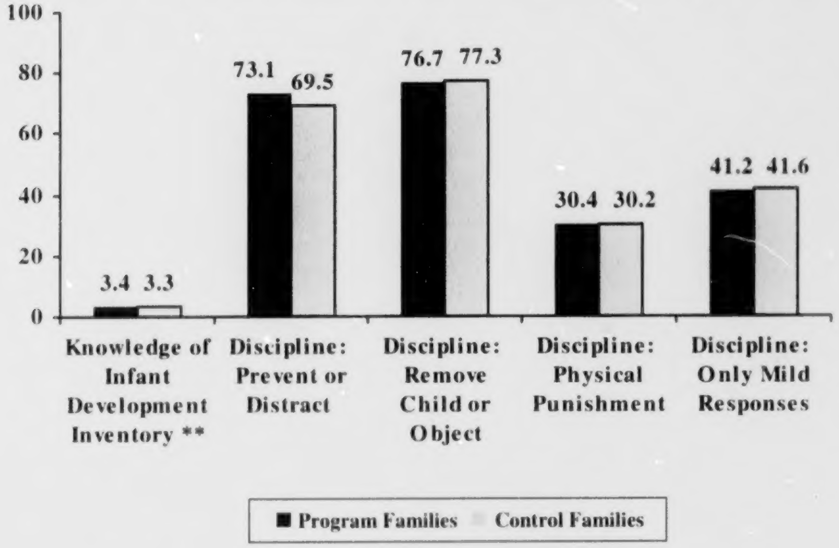
FIGURE V.12

IMPACTS PER PARTICIPANT ON KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES, BY WELFARE-RELATED WORK REQUIREMENTS

Work Requirement for Parents of Infants (Scale Score/Percentage)



No Work Requirement for Parents of Infants (Scale Score/Percentage)



Source: Parent interviews, interviewers observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

stimulation of language and learning. Early Head Start programs in sites without a work requirement had a positive impact on reading to the child but also on the other key measures of parent stimulation of language and learning. Early Head Start had no impacts on negative parenting behavior in either subgroup defined by welfare-related work requirements (see Figure V.11). Finally, Early Head Start programs in sites with a work requirement for parents of infants had a positive impact on parents' discipline strategies (see Figure V.12) but not on their knowledge of child development. The reverse was true for Early Head Start programs in sites without a work requirement for parents of infants.

G. FATHERS AND FATHER FIGURES IN THE LIVES OF EARLY HEAD START CHILDREN

Although the vast majority of respondents to the parent interviews were mothers, the Early Head Start research also collected information about fathers and father involvement from the men, themselves. Based on data from the cross-site national study, Box V.7 presents a picture of the range of activities and contacts with their children that the fathers of Early Head Start children participate in. Whether they live with the child or not, whether they are the child's biological father or a father figure (or social father), men play important roles in the lives of Early Head Start children.

A number of local research teams have conducted research on fatherhood issues. The experiences of one of the Early Head Start research programs that had a special emphasis on father involvement—both with the program and with the fathers' children—are described in Box V.8. Future reports will provide even greater details on Early Head Start fathers and children.

BOX V.7

FATHERS AND FATHER FIGURES IN THE LIVES OF EARLY HEAD START CHILDREN

Fathers are important in Early Head Start programs and the National Early Head Start Research and Evaluation Project includes studies of fathers. Early Head Start programs have increasingly devoted energies, not only to involving men in program activities, but to encouraging biological fathers and father figures (or social fathers) to be more active participants with their children and families. Here we report features of father presence and participation in the lives of Early Head Start children based on both mothers' and fathers' reports. As described in Chapter II, at the time of the 14- and 24-month birthday-related parent interviews we asked mothers about their children's father and any father figures. In addition, when the children were 24 months old, we interviewed fathers directly in 12 of the 17 research sites.

Based on reports from Early Head Start program mothers, most children had some contact with their father or a father figure when the children were 14 and 24 months old. Mothers reported that nearly half of the children lived with their biological father. If the child did not live with his or her biological father, we asked the mother about the nonresident biological father and how often the father saw the child. If the father saw the child a few times per month or more, we categorized the family as having a father who was in contact with his child. When the mother reported that there was a nonresident biological father, we also asked her about any other men who might be "like a father" to the child. If the mother named a father figure, we categorized the family as having a father figure who was in contact with the child. At 14 and 24 months, mothers reported that almost 90 percent of the children had contact with their biological father or a father figure, and the percentage of children with father contact was stable over time (see Table 1).

We also asked mothers about how often the child's father or father figure read to the child or told stories, fed the child, went to a playground or for a walk with the child, and played at home with the child. From the mothers' ratings we created a father-child activity score and compared the scores across family types. As expected, father-child activity scores were highest when families included a resident biological father, and lowest when the mother reported that the biological father had no contact with the child and there was no father figure. Father-child activity scores were similar for families with a nonresident biological father who was in contact with the child and for families with no biological father contact and a father figure. A father-child activity score of 12 reflects a frequency of fathers participating in the father-child activities on average a few times per month. See Appendix C for a description of how the activity score was constructed.

When the children were 24 months old, Early Head Start fathers and father figures in the 12 father study sites reported that they participated in their children's lives in a variety of ways. Fathers reported that they engaged in a variety of caregiving, social, cognitive play, and physical play activities with their children. From 12 to 50 percent of the fathers/father figures reported that they participated in the father-child activities at least a few times per week or more (47 percent of fathers/father figures reported performing caregiving activities, 12 percent engaged in cognitive play, 32 percent reported participating in social activities, and 50 percent engaged in physical play with their 24-month children a few times per month or more).

Based on the father interview responses, we were able to refine the father-child contact categories we used for the mother reports and we categorized the father-child relationship as resident biological (63 percent), nonresident biological (20 percent), or father figure (18 percent).[1] Compared to non-resident biological fathers, resident biological fathers reported more frequent activities, whereas resident biological fathers and resident father figures reported similar levels of participation in the father-child activities (see Table 2).

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[1] We could not use the same categories because for some of the father interviews the mother and father reports did not match (the father interview may have happened a few months later and circumstances may have changed), and some father interviews were conducted when there was no mother interview. We did not include nonresident father figures in our analyses because we did not complete many interviews with these men. Percentages do not equal 100 due to rounding.

BOX V.7 (CONTINUED)

TABLE 1

MOTHER REPORTS OF FATHER-CHILD CONTACT AND ACTIVITIES IN EARLY HEAD START FAMILIES BY FAMILY TYPE AT 14 AND 24 MONTHS

	Resident Biological Father, Regular Contact	Nonresident Biological Father, Some Contact[a]	Nonresident Biological Father Low Contact, Father Figure	Nonresident Biological Father Low Contact, No Father Figure
Percent of Families at 14 Months	48.0	26.8	12.9	12.4
Percent of Families at 24 Months[a]	46.5	28.5	14.3	10.7
14-Month Father-Child Activity Score	16.4	12.9	13.5	2.5
24-Month Father-Child Activity Score	17.3	14.4	15.3	1.8
Sample Size	**535**	**276**	**145**	**89**

SOURCE: 14- and 24-Month Early Head Start Birthday-Related Parent Interview.

NOTE: Percentages are weighted for nonresponse and then by site. Father-child activity scores are the sum of mothers' responses to questions about the frequency of four activities rated on a scale of zero to five (higher values mean more frequent activity). The standard deviation for these values ranges from 0.8 to 2.5.

[a] If the mothers reported that the nonresident biological father saw the focus child a few times per month or more, we CATEGORIZED the father as having some contact. More than a third of the families with a nonresident biological father with some contact also reported having a father figure.

TABLE 2

EARLY HEAD START FATHER REPORTS OF FATHER-CHILD ACTIVITIES BY FAMILY TYPE

Activities	Resident Biological Fathers	Nonresident Biological Fathers	Resident Father Figures
Mean Caregiving Score	51.4	46.0	48.3
Mean Social Activities Score	49.9	43.9	50.0
Mean Cognitive Play Score	50.2	46.5	49.3
Mean Physical Play Score	50.4	45.1	51.1
Sample Size	**226**	**61**	**60**

SOURCE: 24-Month Father Interviews conducted in 12 sites.

NOTE: Tabled values are (unless otherwise noted) means weighted such that each site has equal weight regardless of the number of fathers they contributed to the sample. The father-child activities scores are normalized *T*-scores with a mean of 50 and standard deviation of 10. Standard deviations for caregiving, social activities, cognitive play, and physical play range from 8.7 to 13.5.

BOX V.8

GETTING DADS INVOLVED: PREDICTORS OF FATHER INVOLVEMENT IN EARLY HEAD START AND WITH THEIR CHILDREN

L.A. Roggman, L.K. Boyce, G.A. Cook, and J. Cook
Utah State University

Bear River Early Head Start, serving northern Utah and southern Idaho, emphasizes father involvement with the program and with the fathers' infants. Understanding the characteristics of families and fathers that are related to father involvement may help program staff develop more-focused strategies for working with hard-to-involve fathers. Family and father characteristics were examined as predictors of father involvement both in the program and with their infant. Variables examined as potential predictors were selected based on the program's emphasis on building relationships as its primary intervention strategy.

The 72 fathers (or father figures) studied were predominantly white (78 percent) and were married or living with the child's mother (94 percent, compared with 75 percent of mothers who were married or living with a partner). Fathers' characteristics predicted their involvement in expected ways. Fathers were rated as more involved, both with their infants and with the Early Head Start program, when they were better educated, less depressed, more likely to use social support (especially spiritual support), and more active in their religion. Fathers who had better relationships with home visitors were those who had these characteristics and who also were less anxious about close relationships.

One implication of our results is that it appears that "the rich get richer." That is, those fathers who are already good at relationships, trusting, and able to turn to others are the same ones who participate more in Early Head Start programs and are more engaged with their children. In contrast, the fathers who are not functioning well psychologically or socially may be the ones who most strongly resist participating in Early Head Start programs but who might benefit the most. Bear River Early Head Start hopes to be better able to promote father involvement to enhance children's early development by identifying possible barriers to father involvement when a family first enrolls.

VI. EARLY HEAD START INFLUENCES ON ECONOMIC SELF-SUFFICIENCY, MENTAL HEALTH, AND FAMILY FUNCTIONING

Although the Early Head Start programs focus on the development of infants and toddlers and the relationship between parent and child, they strive to support the healthy functioning and economic self-sufficiency of families, building on their strengths and working with them to remove barriers. Early Head Start eligibility guidelines require that the income level of at least 90 percent of families admitted to the program be below the poverty line. While they may have many strengths, families at this income level often struggle for survival, and financial concerns can interfere with parenting or infant development. Therefore, to help support their children, many programs aim to help them become stabilized economically and move toward self-sufficiency.

The parent's ability to progress toward self-sufficiency and to develop a supportive relationship with the child may depend on mental health and family functioning. Mothers who are depressed or who live in families with high levels of conflict may have difficulty with both nurturing their children and functioning in the workplace. Programs attempt to address mental health and family functioning issues in a variety of ways, but removing these substantial barriers to economic self-sufficiency and the development of supportive parent-child relationships is very challenging.

A. HYPOTHESES AND BRIEF SUMMARY OF INTERIM FINDINGS

Early Head Start programs may have several reasons for wanting to help families improve their economic well-being (which the programs attempt to do by helping parents obtain education, find jobs, and maintain employment over time). First, an important part of the parenting role is to provide economic support for the family. When resources are insufficient, family members may lack food, housing, and other necessities. Programs may find that families turn to them to help address financial crises that arise when income is very low. Helping these families to stabilize by increasing their available income is a high priority for avoiding future crises of this nature. Second, welfare reform had reached all the states, at least to some extent, by the time the Early Head Start research programs were enrolling families. The new rules eliminated any entitlement to cash assistance, imposed work requirements, and established a time limit on welfare benefits. Therefore, helping families make progress toward long-term self-sufficiency became much more important. More immediately, in about half the states, parents of infants who were receiving cash assistance had to meet work requirements to continue receiving benefits. In the other states, the work requirements applied when the child was 1 year old. Thus, programs needed to help families make sound decisions about education and employment in the new welfare policy environment.

Third, programs are mindful of the established links between family income and children's well-being. Families with more resources to enhance children's home environments live in safer, healthier housing and neighborhoods and provide children with access to health care and opportunities to learn. Children in such families are more likely to perform better in school and have fewer behavioral problems that threaten their educational and social development (Blau 1999; Bradley and Coreway in press; Bradley and Whiteside-Mansell 1998; Duncan and Brooks-Gunn 1997; Mayer 1997). Helping parents toward employment and economic self-sufficiency would be another way to support children's development, one that would continue to influence children once they left Early Head Start.

At the same time, parents' mental health and family functioning may affect the extent to which they can move toward self-sufficiency and respond to program services designed to foster supportive parent-child relationships. State and local welfare agencies are currently struggling with mental health problems, abusive family relationships, and other issues as they seek to help families who are having difficulty with the transition from welfare to work. When parents are depressed, they often have a hard time responding to their infants and toddlers in positive and supportive ways, and some Early Head Start programs are finding that parenting education alone cannot substantially remedy the situation. Early Head Start programs are required to have a mental health component, but community mental health services to which they can refer parents are sometimes insufficient.

1. Hypotheses About, and Synopsis of Findings On, the Influences of Early Head Start on Families' Economic Self-Sufficiency

a. Hypotheses

For all families, the goal of economic self-sufficiency includes the ability of adults in the household to earn enough regular income to meet the family's needs for shelter, nutrition, clothing, medical care, child care, and the materials children need as they grow. Over time, the economic goals of the family may expand beyond mere economic self-sufficiency. Parents may wish to obtain an adequate foundation of education and job experience to enable them to raise their economic status further over time, so that they can keep improving their housing, access to education, medical services, child care, and materials to promote children's development.

Families enter Early Head Start programs in very different positions with respect to these goals. Some parents lack a high school education and have spotty or no job experience. Others enter the program with a high school education and a solid work record. Families also vary in the extent to which they have relied on welfare for income assistance. The education, employment, and welfare backgrounds that parents bring to the program affect the services that programs will need to provide in order to help them move toward self-sufficiency. What parents bring can also affect the likelihood of success of those efforts.

We would expect the programs to help parents who enter Early Head Start without a high school education and with little job experience take steps toward obtaining a high school diploma or GED. Parents in families receiving welfare may face work requirements, so we would expect programs to help them learn about such requirements and choose their work activities strategically. As Early Head Start programs are not employment services or welfare agencies, we would not expect them to emphasize a speedy transition to employment. Instead, because the programs intend to work with these families for two to three years, we would expect them to try to improve the prospects for long-term self-sufficiency by helping parents make long-range plans to improve education and skills before beginning a job. As parents are building skills and caring for their infants, we would expect the program to help them obtain adequate income and resources from government programs for which they are eligible. Thus, we have developed the following hypotheses about the impacts of Early Head Start on the self-sufficiency of families with lower levels of education and job experience:

- In the short term, Early Head Start families are expected (1) to participate more than control families in education activities, and (2) to complete high school and obtain additional education credentials at higher rates than control families.
- In the short term, Early Head Start families are expected to tap sources of income and benefits from government programs for which they are eligible, including cash assistance, food stamps, and health insurance.
- In the short term, Early Head Start families are not expected to have higher levels of employment or earnings than the control group.
- Over time, Early Head Start families are expected to have higher levels of employment, greater job stability, higher earnings, and lower levels of income and benefits from government sources than control families.

Parents who enter Early Head Start programs with a high school diploma and a strong record of employment may not need intensive services to become economically self-sufficient. Early Head Start programs may nevertheless play a critical role in helping them sustain self-sufficiency. High-quality child care can be difficult for low-income parents of infants and toddlers to find, and where it exists, it can be very expensive (Adams et al. 1998; Cost, Quality, and Child Outcomes Study Team 1995a and 1995b; Galinsky et al. 1994; Kontos et al. 1995; Long and Clark 1995; NICHD Early Child Care Research Network 1997; and Ross and Paulsell 1998). Early Head Start programs can help employed parents obtain subsidies to pay for child care in the community and to locate high-quality child care. Some of the programs offer center-based infant-toddler care that meets the Head Start Program Performance Standards. We have found that such care is better than the care that multisite studies have shown to be generally available in communities (see *Pathways to Quality*; ACYF 2001b). In addition to child care support, the programs can help these parents obtain additional education or training that will enable them to obtain stabler, higher-paying jobs. The child care and other support that Early Head Start programs can offer the parents who are more employment-ready is expected to contribute to the following impacts:

- In the short term, Early Head Start families should have higher levels of employment, as well as more continuous employment, than control families. This should lead to greater gains in family income.
- In the short term, Early Head Start families will probably participate in education and job training activities to help them get better jobs or advance in their current jobs in the longer term.
- Over the long term, more continuous employment should enable Early Head Start parents to improve their earnings, the quality of their jobs, and their family income relative to control group parents.

b. Synopsis of Findings

The interim findings reported in this chapter suggest that Early Head Start services may have helped build self-sufficiency in the long term, but they did not develop it in the short term. As we expected, the Early Head Start programs significantly increased participation in education or job training activities in the short term. However, they did not significantly increase either employment or overall participation in self-sufficiency activities (defined as participating in education/training or employment). This pattern of findings is consistent with program staff reports during site visits that they often counseled families not to take the first job they could find and advised them instead to get the education or training they needed to obtain a stable job that would pay higher wages. As expected, the Early Head Start programs also did not have a significant impact on poverty or welfare receipt in the short term.

Full implementation of program services appears to lead to slightly stronger impacts on family self-sufficiency. The programs that were early implementers significantly increased several measures of employment and education or job training during the first 15 months after random assignment. Later implementers did not increase employment or participation in education and training activities. The incomplete implementers also had some positive impacts on participation in education or job training, reflecting specific program characteristics or strategies that enabled them to achieve impacts despite the implementation challenges they faced.

The interim findings also show that in sites where welfare-reliant parents of infants were required to work, the Early Head Start programs helped some eligible parents obtain cash assistance and significantly increased welfare receipt in the short term. The programs did not have a significant impact on welfare receipt in the sites that did not have early work requirements. The Early Head Start programs increased participation in education or job training in both groups of sites.

2. Hypotheses About, and Synopsis of Findings On, the Influences of Early Head Start on Physical and Mental Health and Family Functioning

a. Hypotheses

Parent and family well-being are important underpinnings of progress toward self-sufficiency and supportive parent-child relationships. Good mental health is of course an important goal in its own right, and Early Head Start programs are often concerned about parents who face mental health challenges. Low-income mothers have a higher incidence of depression, which may interfere with their education and employment, which may in turn cause economic difficulties that intensify their mental health problems (Johnson and Meckstroth 1998; Kisker et al. 1998; Olson and Pavetti 1996; and Zedlewski 1999). The proportion of parents who have experienced domestic abuse is high among families who have received welfare, and it can lead to the loss of jobs and negative outcomes (Bloom et al. 2000; Friedman and Couper 1987; Gennetian and Miller 2000; Johnson and Meckstroth 1998; and Osofsky 1995).

Thus, Early Head Start programs are likely to face the challenges of mental health and family dysfunction to varying degrees. The extent of these problems, as well as the capacity of the programs to address them, may affect how well the programs can engage families in appropriate services and influence their success with other goals, including self-sufficiency, supportive parent-child relationships, and infant-toddler development. Early Head Start programs' case management services, and the intensity with which they work with families on issues that arise, may allow the programs both to alleviate family crises and to help parents avoid new ones. However, treating clinical depression requires a specific mental health intervention. Program staff in many sites reported during site visits that mental health services to which they could refer families were scarce in their community, and the data show that the Early Head Start programs did not have any impacts on the receipt of mental health services in the short term. Therefore, our hypotheses about the impacts of Early Head Start on parents' mental health are modest. In home-based and mixed-approach programs, home visitors who meet frequently with parents and focus on everyday issues affecting parenting may help alleviate stresses and negative feelings. Severe depression is unlikely to be cured unless the parent receives mental health services. Thus, we have the following hypotheses about Early Head Start impacts on health and family functioning:

- Early Head Start parents are expected to have lower levels of parenting stress, lower levels of dysfunctional parent-child interactions, and lower levels of family conflict than control group parents, although these effects are likely to be modest.
- Early Head Start is not expected to reduce levels of depression among parents, because there was no impact on receipt of mental health services.
- Early Head Start programs with more-intensive home-based services are expected to have stronger impacts on parents' mental health and family functioning.

b. Synopsis of Findings

The interim findings reported in this chapter show that the Early Head Start programs significantly improved several aspects of family functioning. They reduced parental distress, dysfunctional parent-child interactions, and family conflict when children were approximately 24 months old. However, as expected, Early Head Start did not have a significant impact on the likelihood that parents had suffered a major depressive episode in the previous year. We did not find that the home-based programs had stronger impacts on family functioning.

Program impacts on mental health and family functioning varied by programs' pattern of implementation. Full implementation appears to be important for achieving reductions in parental distress and depression. However, only the incomplete implementers had significant impacts on parent-child dysfunctional interactions and family conflict. These impacts may reflect the strong family support focus of some of the incomplete implementers.

B. GLOBAL IMPACTS ON FAMILY WELL-BEING

We conducted global impact analyses to examine the hypotheses described above. Because the available data for analyzing self-sufficiency and family functioning cover only about 15 months after program enrollment and include measures of family functioning administered when children were 2 years old, the findings pertain to the short-term impacts of the Early Head Start programs on family well-being. Next, we describe the measures of family well-being we used and present the programs' short-term impacts on them.

1. Measures of Self-Sufficiency, Mental Health, and Family Functioning

Our estimates of the impact of Early Head Start on family well-being are based on parent interviews and come from two major sets of follow-up data used in this interim report (see Chapter II and Appendix C for details). Two sets of outcomes—receipt of services and self-sufficiency activities—are likely to be influenced by the length of the intervention. Therefore, information on these outcomes was collected at intervals after the family enrolled in Early Head Start. Another set of outcomes—children's development, some aspects of parenting, and features of child care arrangements—require standardization by the age of the child, and so they were collected at specific age levels. Outcomes that are closely related to child development outcomes, including parenting, mental health, and family functioning, were also collected in the birthday-related interviews.

The measures of economic self-sufficiency, including education, employment, welfare program participation, and family income, are based on data that were obtained at 7 and 16 months, on average, after enrollment in Early Head Start, and represent short-term impacts of the program. The measures of economic self-sufficiency are summarized in Box VI.1.

Measures of parent mental health and family functioning were obtained in the birthday-related interviews when children were approximately 14 and 24 months old. Children entered

BOX VI.1

MEASURES OF ECONOMIC SELF-SUFFICIENCY

Education:	Parents were asked about education and job training programs that they had participated in during the follow-up period, including the start and end dates for those activities and the typical hours per day and days per week they spent in those activities. From that information we constructed a weekly timeline of education/training activities and indicators of whether parents were in education/training activities during each of the first five quarters following random assignment. We also combined information on hours per day and days per week for all education/training activities to obtain the average hours per week parents spent in education/training activities during the 15-month follow-up period. Averages include zero hours.
Employment:	Parents were asked about jobs that they had held during the follow-up period, including the start and end dates for those jobs and the typical hours per week they worked in those jobs. From that information we constructed a weekly timeline of employment activities and indicators of whether parents were employed during the first five quarters following random assignment. We also combined information on hours per day and days per week for all jobs to obtain the average hours per week parents spent in employment during the 15-month follow-up period. Averages include zero hours.
Any Activity:	The weekly histories of education/training activities and jobs were combined to create a timeline of participation in any of these self-sufficiency activities and indicators of whether parents participated in any self-sufficiency activities during each of the first five quarters following random assignment. We also added the average number of hours spent in education/training and jobs to get the average number of hours parents spent in any self-sufficiency activities during the first 15 months after random assignment. Averages include zero hours.
Welfare Program Participation:	Parents were asked about their receipt of AFDC/TANF cash assistance, food stamps, general assistance, and SSI or SSA benefits, including the amount they received and the months during which they received it. From this information we created a monthly timeline of welfare receipt and a timeline of AFDC/TANF cash assistance receipt, as well as indicators of welfare receipt and AFDC/TANF cash assistance receipt during each of the first five quarters after random assignment. We also added the welfare benefit amounts to obtain the total amount of welfare benefits received, the total amount of food stamps received, and the total amount of AFDC/TANF cash assistance received during the 15-month follow-up period. Averages include zero benefit amounts.
Family Income and Resources:	In the Parent Services Follow-Up Interviews, parents were asked about their family income during the last year. We compared information on their annual income and the number of children in their family with federal poverty levels to create an indicator of whether or not the family's income during the year prior to the second follow-up was above the poverty level or not. Family resources were assessed using the Family Resource Scale (Dunst and Leet 1987) plus items assessing additional resources, in which parents rated the adequacy of 39 specific resources on a scale of 1 (not at all adequate) to 5 (almost always adequate). The item values were summed to obtain a total family resources scale value.

Early Head Start at a wide variety of ages, and such interviews could be conducted within an eight-month window around the child's birthday. As a result, the 14-month interviews occurred between 1 and 27 months after enrollment, and the 24-month interviews took place between 10 and 37 months after enrollment. The average 14-month interview was conducted about 12 months after enrollment, and the average 24-month interview about 22 months after enrollment. The measures of parent health and family functioning discussed in this chapter are summarized in Box VI.2.

2. Any Self-Sufficiency Activities

Although parents entering Early Head Start had children under 1 year old (or were pregnant), a very high proportion engaged in education, training, or employment activities during the first 15 months after enrollment (see Table VI.1). More than four out of five parents in both the Early Head Start and the control groups participated in one or more of these self-sufficiency activities during this period. Early Head Start had no overall impact on the proportion of parents participating in any self-sufficiency activity during the first 15 months after enrollment. Early Head Start also had no impact on the average hours of participation in any self-sufficiency activity during the first 15 months after enrollment.

The time profile of the quarterly participation rates in self-sufficiency activities shows that parents steadily increased participation in self-sufficiency activities following enrollment in Early Head Start, from just under 60 percent in the first quarter to just over 70 percent in the fifth quarter (Figure VI.1). Early Head Start and control group parents had essentially the same pattern of participation overall in self-sufficiency activities throughout the 15-month period. In the next two sections, we separately examine participation in the two major component activities that we are referring to as "self-sufficiency activities," those related to (1) employment, and (2) education or training.

BOX VI.2

MEASURES OF THE PARENT'S HEALTH AND FAMILY FUNCTIONING

Parenting Stress Index – Short Form (PSI-SF) – measures the degree of stress in parent-child relationships stemming from three possible sources: the child's challenging temperament, parental depression, and negatively reinforcing parent-child interactions (Abidin 1995). We included two subscales of the PSI-SF:

> ***Parental Distress*** – measures the level of distress the parent is feeling in his or her role as a parent stemming from personal factors, including a low sense of competence as a parent, stress because of perceived restrictions stemming from parenting, depression, and lack of social support.
>
> > The parent answers whether he or she agrees or disagrees with statements such as, "You often have the feeling that you cannot handle things very well," and "You feel trapped by your responsibilities as a parent," and "You feel alone and without friends." Responses are coded on a 5-point scale, with 5 indicating high levels of parental distress.
>
> ***Parent-Child Dysfunctional Interaction*** – measures the parent's perception that the child does not meet the parent's expectations and interactions with the child are not reinforcing the parent. The parent may perceive that the child is abusing or rejecting the parent or that the parent feels disappointed in or alienated from the child.
>
> > The parent answers whether he or she agrees or disagrees with statements such as, "Your child rarely does things for you that make you feel good," and "Most times you feel that your child does not like you and does not want to be close to you," and "Your child seems to smile less than most children." Responses are coded on a 5-point scale, with 5 indicating high levels of parent-child dysfunctional interaction.

Composite International Diagnostic Interview Short Form (CIDI-SF) – evaluates six Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA 1994) and two DSM-IIIR substance disorders (Nelson, Kessler, and Mroczek 1998). The CIDI-SF uses a stem-branch logic in which a small number of diagnostic stem questions are used to eliminate respondents who are least likely to be cases before they are asked further symptom questions. The CIDI-SF yields a score that can be converted to the probability of clinical caseness ranging from 0 to 1 for each disorder. We used one section of the CIDI-SF as an outcome measure:

> ***Major Depression*** – provides a probability of caseness for a DSM-IV major depressive episode experienced in the previous 12 months.

Family Environment Scale – measures the social environments of families along 10 key dimensions, including family relationships (cohesion, expressiveness, and conflict); emphases within the family on aspects of personal development that can be supported by families (for example, achievement orientation; independence); and maintenance of the family system (organization and control) (Moos and Moos 1976). We measured one dimension:

> ***Family Conflict*** – measures the extent to which the open expression of anger and aggression and generally conflictual interactions are characteristic of the family. Parents respond to items on a 4-point scale, where 4 indicates higher levels of agreement with statements such as, "We fight a lot," and "We hardly ever lose our tempers." Items were recoded and averaged so that 4 indicates high levels of conflict.

Health Status – measures the parent's perception of own health status on a five-point scale, where 1 indicates poor health and 5 indicates excellent health.

TABLE VI.1

IMPACTS ON SELF-SUFFICIENCY ACTIVITIES

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Any Self-Sufficiency Activities				
Percentage of parents ever employed or in an education or job training program in first 15 months	85.1	82.6	2.5	6.6
Average hours per week employed at all jobs and in any education or training in first 15 months	20.1	19.7	0.4	2.2
Employment Activities				
Percentage of parents ever employed in first 15 months	72.2	71.9	0.2	0.5
Average hours per week employed at all jobs in first 15 months	14.6	15.4	-0.8	-5.5
Education Activities				
Percentage of parents who ever participated in an education or training program in first 15 months	48.4	43.7	4.7**	9.5
Average hours per week in an education program during first 15 months	5.3	4.1	1.1***	14.6
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews conducted an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

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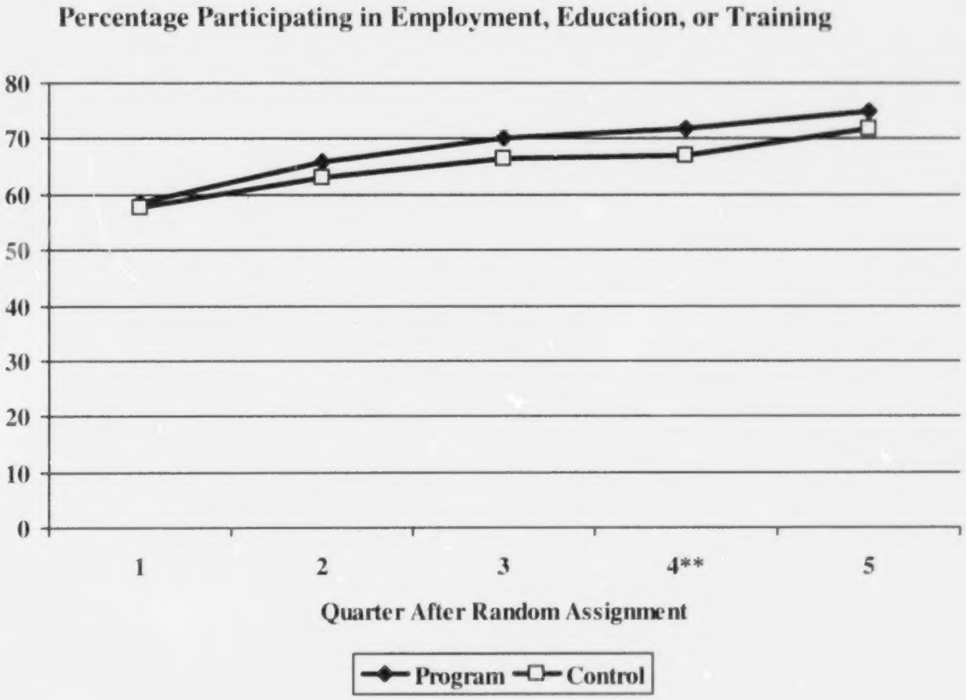
FIGURE VI.1

IMPACTS ON ANY SELF-SUFFICIENCY ACTIVITY, BY QUARTER



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

3. Employment

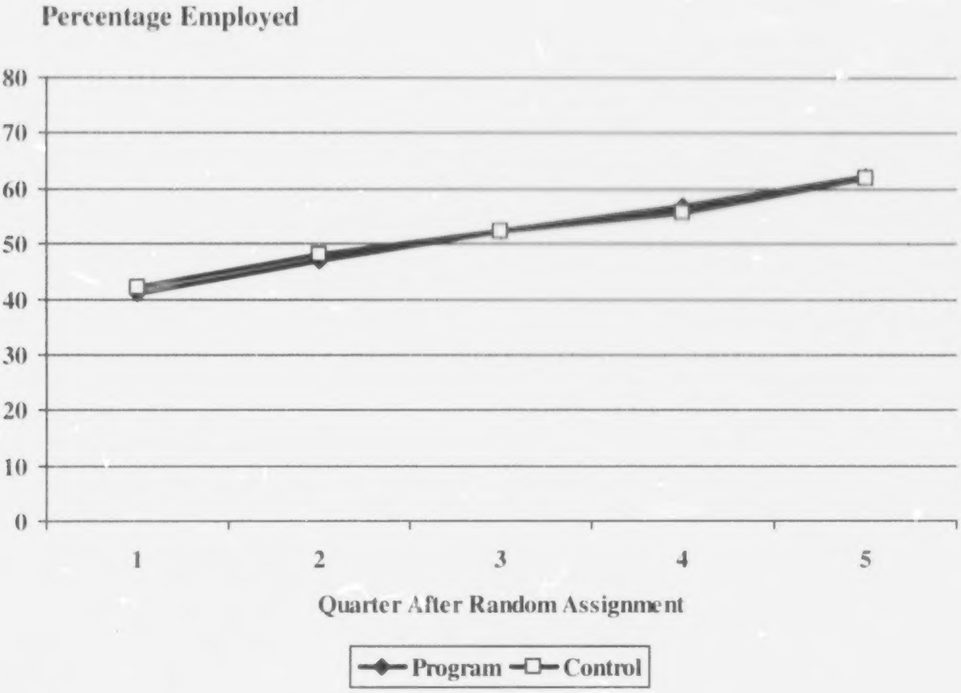
The percentage of parents who ever participated in employment activities over the first 15 months after enrollment was high (72 percent of both the control group and Early Head Start participants). Thus, nearly all the parents who participated in any self-sufficiency activity worked at some point during the 15 months after enrollment (see Table VI.1). Moreover, about three-quarters of the 20 hours per week of self-sufficiency activities was time spent in employment.

The time profile of quarterly employment rates indicates that employment increased substantially for both the Early Head Start and the control groups during the first 15 months after enrollment (see Figure VI.2). The proportion of parents employed in both groups increased from about 40 percent to 60 percent over the period, which most likely reflects the influences of the strong economy, welfare-related work requirements, and parents' greater readiness to work as children got older.

Early Head Start did not increase any measure of employment activity, including the proportion ever employed during the 15 months after enrollment, the quarterly employment rates, and the average hours worked per week. This is not surprising, since it is not the focus of Early Head Start to provide its parents a quick entry into employment. Instead, it appears that the employment activities of both the Early Head Start and the control group were much more likely to be governed by the strong influences of welfare policy and the growing economy. Moreover, Early Head Start staff may have taken a longer-term perspective on the transition to self-sufficiency, one that emphasized first obtaining a stronger foundation of education, as we discuss in the next section.

FIGURE VI.2

IMPACTS ON EMPLOYMENT RATES, BY QUARTER



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

4. Educational Activities and Attainment

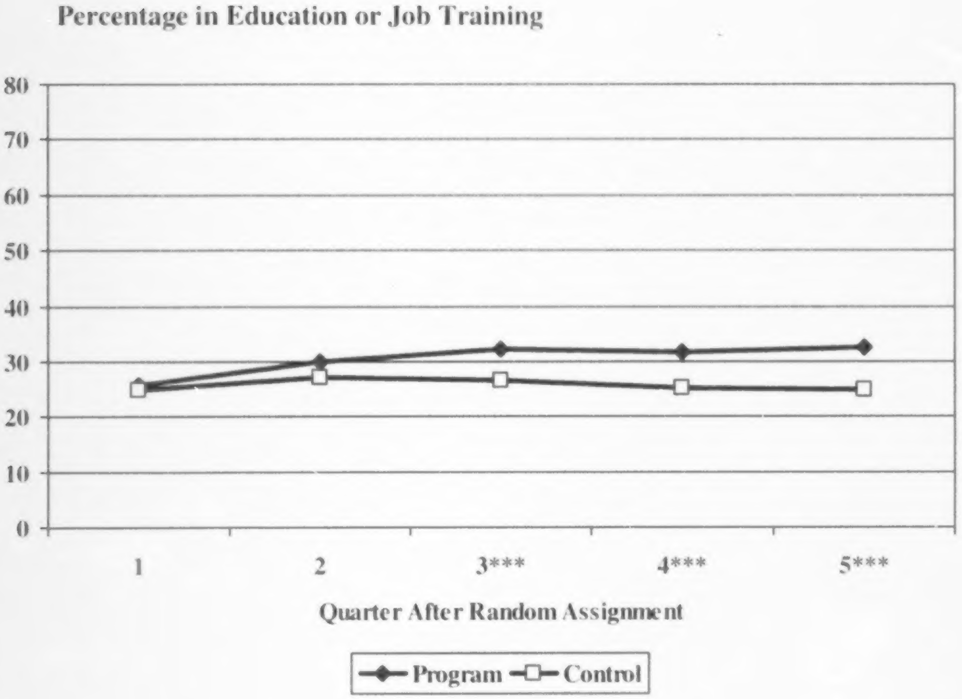
More than 40 percent of parents who applied to Early Head Start participated in an education or job training program during the first 15 months after enrollment (see Table VI.1). Over this 15-month period, Early Head Start increased the proportion of parents who ever participated in education or training activities and increased the average number of hours per week of participation. Early Head Start programs appear to have encouraged and facilitated the activities of parents seeking further education to enhance their future prospects for employment and self-sufficiency.

The time trend of participation in education and training activities indicates that both the Early Head Start and the control groups started out with a participation rate of about 25 percent in the first quarter (see Figure VI.3). However, over the next two quarters, the participation rate for Early Head Start parents increased more sharply than for the control group and then leveled off at 32 percent. After the first two quarters, parents in the control group were slightly less likely to participate in education and training activities in each subsequent quarter. Thus, the impact of Early Head Start on participation in such activities was positive and significant in quarters 3 through 5, increasing from 26 to 32 percent (while control group families returned to their initial 25 percent participation level).

The parents who applied to Early Head Start pursued many different types of education activities, but the most frequent were high school classes and vocational education, with about 10 to 16 percent of parents enrolled in each (Table VI.2). The participation of parents from both the Early Head Start and control groups in high school and vocational programs indicates a strategic interest in strengthening their educational backgrounds while their children were young, with the goal of obtaining better jobs in the future. A larger proportion of them were young parents enrolled in high school (rather than in GED preparation programs), which suggests that teenage

FIGURE VI.3

IMPACTS ON PARTICIPATION IN EDUCATION AND TRAINING PROGRAMS, BY QUARTER



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

TABLE VI.2

IMPACTS ON EDUCATION ACTIVITIES AND CREDENTIALS

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Types of Education Activities				
High School	12.4	9.1	3.4***	11.5
High School or Alternative	12.7	10.6	2.1*	6.9
Adult Basic Education	2.9	2.8	0.1	0.6
English as a Second Language	2.6	1.3	1.4**	12.2
GED Preparation	6.7	6.5	0.2	0.7
Any Vocational Education	15.2	13.1	2.1	6.5
2-Year College	7.6	7.0	0.6	2.4
4-Year College	4.7	5.1	-0.4	-1.9
Degrees and Credentials Received				
Highest Grade Completed at Second Follow-Up	11.4	11.5	-0.1	-3.0
GED Certificate	9.4	9.4	0	0
High School Diploma	47.4	46.6	0.8	1.7
Received a High School Degree or GED Between Enrollment and Second Follow-Up	24.4	23.9	.5	1.2
Vocational, Business, or Secretarial Diploma	15.9	15.2	0.7	1.9
Associate's Degree	3.5	4.0	-0.5	-2.7
Bachelor's Degree	3.4	4.3	-1.0	-4.9
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

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parents may constitute an important subgroup of parents of young children seeking to strengthen their educational credentials.

Early Head Start increased high school attendance significantly (a 30 percent increase over the control group level of 9 percent). The programs also doubled participation in English as a Second Language (ESL) classes. Although the proportion of parents participating in these programs was small, expanding participation in these classes could help to improve the types of jobs parents can obtain when they lack fluency in English. None of the patterns of participation in other types of education was significantly different for the two groups.

Early Head Start had no impact on the receipt of degrees or credentials after random assignment. However, 15 months after enrollment in Early Head Start may have been too short a period to observe completion of educational activities. In the final report, we will look for impacts on degrees and credentials after 26 months.

5. Welfare Program Participation

Enrollment in Early Head Start programs for this study coincided with the implementation of the federal welfare reforms that ended the entitlement to cash assistance, instituted work requirements for parents of young children, and placed a five-year time limit on the receipt of cash assistance. Some of the states in this study began welfare reform much earlier than 1997, because they had obtained waivers to operate demonstration programs. This allowed them to test reforms that in many cases anticipated the federal reforms. For example, in 1993 Iowa implemented a welfare reform program that was consistent in most respects with the new federal rules. In other states, however, federal welfare reforms were implemented slowly. For example, as late as 1998, many of the counties in California had not fully implemented work requirements. Thus, the 17 sites in this study vary widely in their welfare-related work requirements and the extent to which these requirements are enforced.

With the substantial changes in welfare policy taking place at varying times in the states, it is not surprising that Early Head Start had no impact on any measure of welfare program participation during the first 15 months after enrollment in Early Head Start (see Table VI.3). Overall, about 65 percent of the families received some type of welfare benefit in the first 15 months after enrollment, including (1) Aid to Families with Dependent Children (AFDC) or Temporary Assistance for Needy Families (TANF), (2) Supplemental Security Income (SSI), (3) Food Stamps, and (4) General Assistance (GA). Most of these families received AFDC or TANF cash assistance at some point during the period. There was no difference between Early Head Start and control families in the percentage receiving any welfare benefits, the percentage receiving specific types of welfare benefits, or the average monthly amounts received from welfare programs.

The time trend in the quarterly participation rates for AFDC or TANF benefits indicates that participation increased slightly over the first three quarters, from about 30 percent to 35 percent, but then dropped back down to 30 percent in the fourth quarter and remained at that level for the fifth (see Figure VI.4). Thus, we do not observe the dramatic decline in AFDC or TANF program participation over the 15-month period that we have seen nationally and in some states since 1996. Reasons for this may include (1) the substantial variation in the extent to which welfare reform was implemented in these sites during the 1996–1998 period in which we measured welfare program participation, and (2) the fact that a substantial portion of sample families were exempt from the work requirements because of the age of their children. Participation in AFDC or TANF was significantly higher in the first quarter for Early Head Start families, but there was no impact on participation rates in any subsequent quarter.

TABLE VI.3

IMPACTS ON WELFARE PROGRAM PARTICIPATION

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Welfare Program Participation				
Percentage of Parents Who Received Any Welfare Benefits During First 15 Months	65.3	64.6	0.7	1.5
Total Welfare Benefits Received During First 15 Months	$3,641	$3,411	$231	5.3
Percentage of Parents Who Received AFDC or TANF Benefits During First 15 Months	44.9	42.8	2.1	4.1
Total AFDC or TANF Benefits Received During First 15 Months	$1,538	$1,474	$64	2.7
Average Total Food Stamp Benefits Received During First 15 Months	$1,305	$1,290	$16	1.0
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews conducted an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test

**Significantly different from zero at the .05 level, two-tailed test.

***Significantly different from zero at the .01 level, two-tailed test.

AFDC = Aid to Families with Dependent Children
TANF = Temporary Assistance for the Needy Fund

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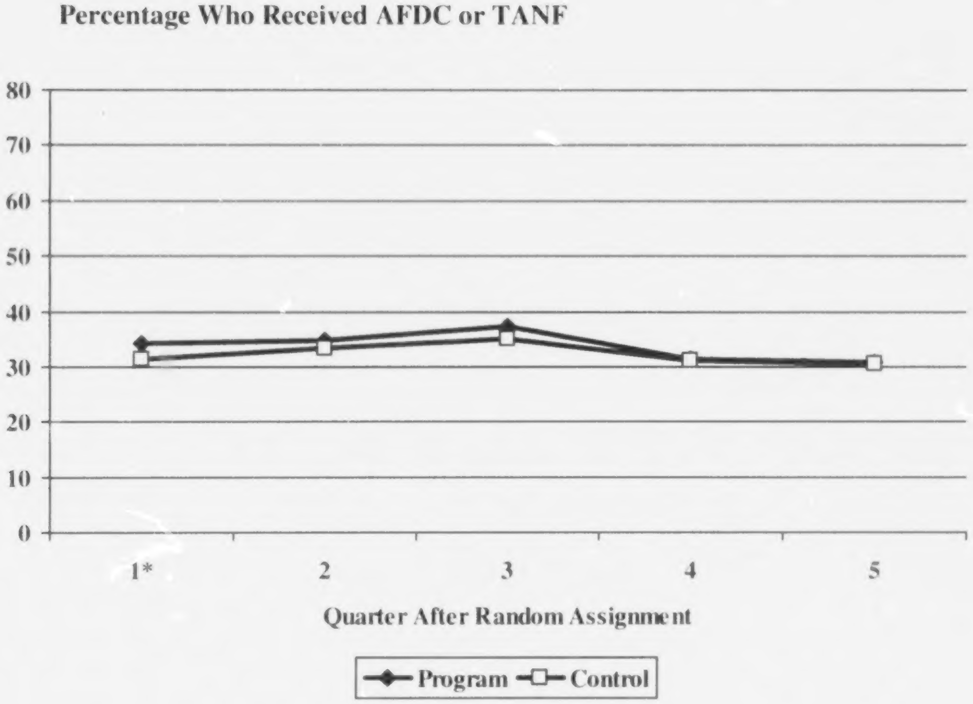
FIGURE VI.4

IMPACTS ON AFDC/TANF RECEIPT, BY QUARTER



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

6. Family Income and Resources

Since Early Head Start had no impact on levels of employment or welfare receipt during the first 15 months after enrollment, it is unlikely that the programs would have had significant impacts on families' economic position, either. This expectation was confirmed: although more families had incomes above the poverty level by the second followup, there was no difference between the program and control groups in the proportion of families with income above the poverty line at that time (approximately 35 percent; see Table VI.4). Moreover, the perceived level of family resources was the same, on average, for both the Early Head Start and control groups at the first and second follow-up interviews.

7. Parent Health, Mental Health, and Family Functioning

Because of the relatively high level of health services available in the community and the absence of program impacts on receipt of family health services, we did not expect strong impacts on the parent's physical health. We also did not expect strong impacts on mental health and family functioning, because infant and parent mental health services were often lacking in the communities, and because the programs did not have a significant impact on receipt of parent mental health services. Nevertheless, the relationship of these outcomes to the parent's ability to function well as a provider and a parent led us to examine Early Head Start's impacts on these outcomes.

Parents in both the Early Head Start and the control groups reported that their health status was, on average, "good" to "very good," with no significant difference between the two groups (see Table VI.5). Early Head Start had no impact on the average likelihood that parents had suffered a major depressive episode in the previous year. However, Early Head Start had favorable impacts on aspects of parenting-related stress and negative feelings. This pattern of

TABLE VI.4

IMPACTS ON FAMILY INCOME AND RESOURCES

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
Percentage of Families with Income Above the Poverty Line at Second Follow-Up	33.8	36.4	-2.5	-7.0
Total Family Resources Scale				
First follow-up	150.3	149.1	1.2	5.5
Second follow-up	153.1	152.2	0.8	4.3
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE VI.5

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING

Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact Per Participant[c]	Effect Size[d]
		Parent's Physical Health		
Parent's Health Status	3.5	3.5	0	2.3
		Parent's Mental Health		
Parental Distress	25.0	25.9	-1.0**	-10.2
Parent-Child Dysfunctional Interaction	16.9	17.4	-0.6*	-9.4
CIDI-Depression–Average Probability	15.3	15.6	-0.3	-0.8
		Family Functioning		
Family Environment Scale–Family Conflict (Average Score)	1.7	1.7	-0.1**	-11.0
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a] A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[d] The effect size was calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

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impacts may result from the fact that, with a few exceptions, programs did not have an intensive mental health focus and often found it difficult to help parents gain access to mental health services, but they were able to address issues associated with parenting. Early Head Start reduced parental distress, or feelings of stress, in the parenting role. Parent-child dysfunctional interaction was also lower, which suggests that Early Head Start parents were less likely than control parents either to feel that their child was rejecting them or to feel disappointed with or alienated from their child.

Early Head Start also reduced the level of family conflict in program families. As part of their work with parents to support parent-child relationships, or through mental health they provided directly, programs may have helped parents learn new ways of handling situations of conflict, both with their children and with other adults. In-depth research by the Harvard University researchers indicates the importance of programs assessing parents' emotional health and parenting stress in order to deliver services most effectively (see Box VI.3).

C. VARIATIONS IN IMPACTS ON FAMILY WELL-BEING BY PROGRAM APPROACH[1]

The three program approaches, center-based, home-based, and mixed, include different configurations of services available to families and different types of support that may lead to varying impacts on self-sufficiency, parent mental health, and family functioning. Center-based programs offer all families infant-toddler care that meets the Head Start Program Performance Standards and is on average better than the care generally available in communities (see *Pathways to Quality;* ACYF 2001b). Parents may find that this high-quality, reliable child care

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[1] In this chapter, we present figures with the subgroup findings from the targeted analyses. For details of subgroup means, effect sizes, sample sizes, and the significance of the differences across subgroup impacts, see tables in Appendix E.VI.

BOX VI.3

ENTRY CHARACTERISTICS OF RURAL FAMILIES WITH YOUNG CHILDREN: ASSESSMENT OF RISK AND RESILIENCE

Catherine Ayoub, Barbara Alexander Pan, and Valeria Rocha
Harvard Graduate School of Education

Research carried out by the Harvard Graduate School of Education research team, in collaboration with Early Education Services in Vermont, suggests that child, parent, and family characteristics that reflect risk and resilience are central to designing interventions. Parenting stressors, family strengths and problems, child-rearing attitudes and practices, and maternal emotional health were examined in 133 families eligible for Early Head Start services. The rural families in this sample are exposed to many of the risks that urban families experience, including isolation, poverty, and single parenting. Most are white native English speakers.

In spite of the relatively uniform demographic picture these families present, they differ widely in risk and resilience factors such as parenting stress, parenting values and beliefs, emotional health, and interpersonal relationships. In this study, parenting stress was measured by the Parenting Stress Index (PSI), a well-validated instrument used to evaluate stressors in both parent and child domains. Parents were considered at high levels of stress based on clinically validated cutoff values established by the author of the measure (85th percentile). Mothers in the sample found parenting more stressful than the average parent in the general population. More than a fourth (28 percent) experienced high levels of parenting stress. However, perceptions of parenting stress among the mothers in the sample varied from very little stress experienced in the role (stress score at the 7th percentile) to stress experienced regularly in almost every domain of parenting (total stress score at the 98th percentile). Sources of parenting tension measured by the PSI included a focus both on the child as difficult (28 percent) and on the mother's feelings of lack of competence as a parent (22 percent). The most common source of parenting stress for these mothers was their child's inability to adapt to change (43 percent). Mothers reported difficulties with their child's distractibility and hyperactivity (26 percent), demandingness (26 percent), acceptability (43 percent), and negative mood (11 percent). One-fifth (20 percent) of the parents in the sample felt that their child did not reinforce her competence as a parent.

Another set of risk factors, based on the Child Abuse Potential Inventory (CAP), focused on the mother's role in ensuring her child's safety and care. This assessment indicates the potential for abusive or neglectful parenting, as well as more specific indexes of distress, rigidity, unhappiness, problems with child and self, problems with family, and problems with others. The clinical cutoff at the 95th percentile was taken as an indicator of high-risk parenting. Maternal responses reflecting the potential to act in a physically abusive way toward the child varied from the 1st to the 99th percentile. More than a fourth (26 percent) of the mothers expressed potentially abusive values and beliefs. Problems most frequently identified as influencing negative parenting and the potential for child abuse included emotional health indicators of unhappiness (26 percent) and emotional distress (22 percent).

In contrast, a sizable group of women (88 percent) showed remarkable ego strength on the CAP. Many mothers saw their relationships with their infants and toddlers as positive (95 percent) and felt that their lives were relatively stress-free in terms of their parenting (PSI 19 percent) and emotional health (CAP 21 percent). This kind of information is central to supporting parents' resilience.

In spite of the geographical, socioeconomic, and ethnic similarities in this group of mothers, their needs and goals for intervention vary considerably. Programs serving families like these need to be able to assess each family's risks and strengths in order to develop an individualized intervention plan.

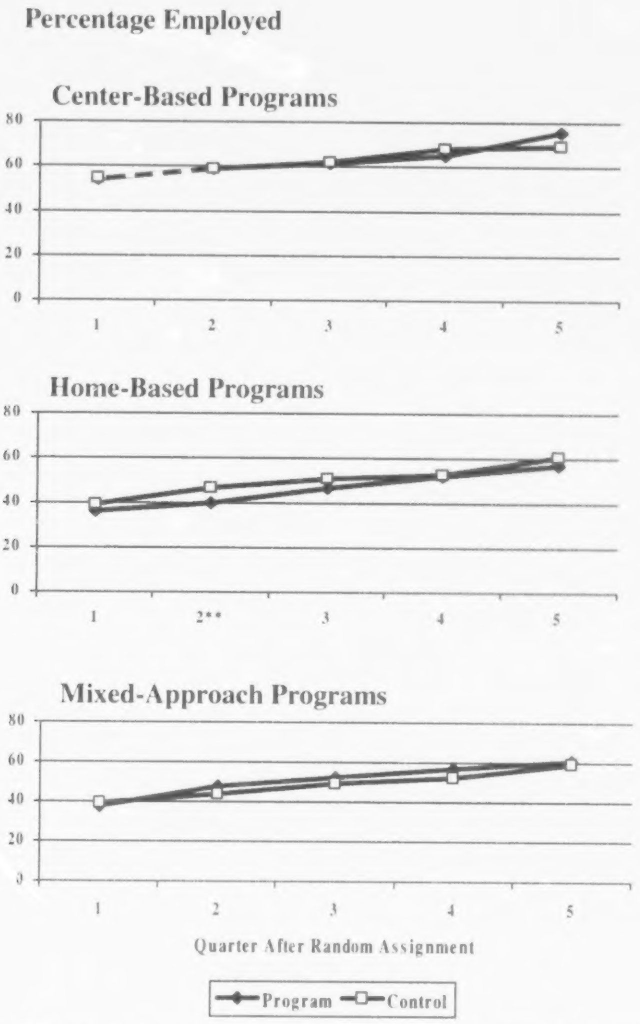
provides stronger and more consistent support for their employment and education activities, and leads to higher levels of employment and education. Similarly, because mixed-approach programs offer center-based care to at least a subset of families in the program, and because they often offer program activities to promote employment, we may find an overall impact on employment and education in this subgroup. Home-based programs and mixed-approach programs may offer parents more social support, because staff meet with parents more often in their own homes. Thus, we may find a stronger impact on mental health and family functioning among parents in these programs. In addition, if more frequent contact with parents enables program staff of home-based and mixed-approach programs to plan strategy about routes to self-sufficiency and support the parents' efforts in this area, Early Head Start may have an impact on self-sufficiency activities among parents in these programs.

1. Impacts on Family Self-Sufficiency

Employment rates by quarter rose steadily, by about 20 percentage points during the first 15 months after random assignment, in all three subgroups defined by program approach (Figure VI.5). Notably, the parents in center-based programs started out with higher employment rates (about 55 percent in quarter 1) than did parents in home-based (about 35 percent) or mixed-approach programs (about 40 percent), which reflects both differences in the characteristics of families entering the various types of programs and efforts to adapt program models to community and family needs. Nevertheless, over this 15-month period of rising employment rates, Early Head Start had no positive impacts on employment in any of the subgroups defined by program approach. Thus, the high-quality infant and toddler care offered by center-based and some mixed-approach Early Head Start programs did not appear to encourage a higher level of employment among parents enrolled in these programs.

FIGURE VI.5

IMPACTS ON QUARTERLY EMPLOYMENT RATES, BY PROGRAM APPROACH



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

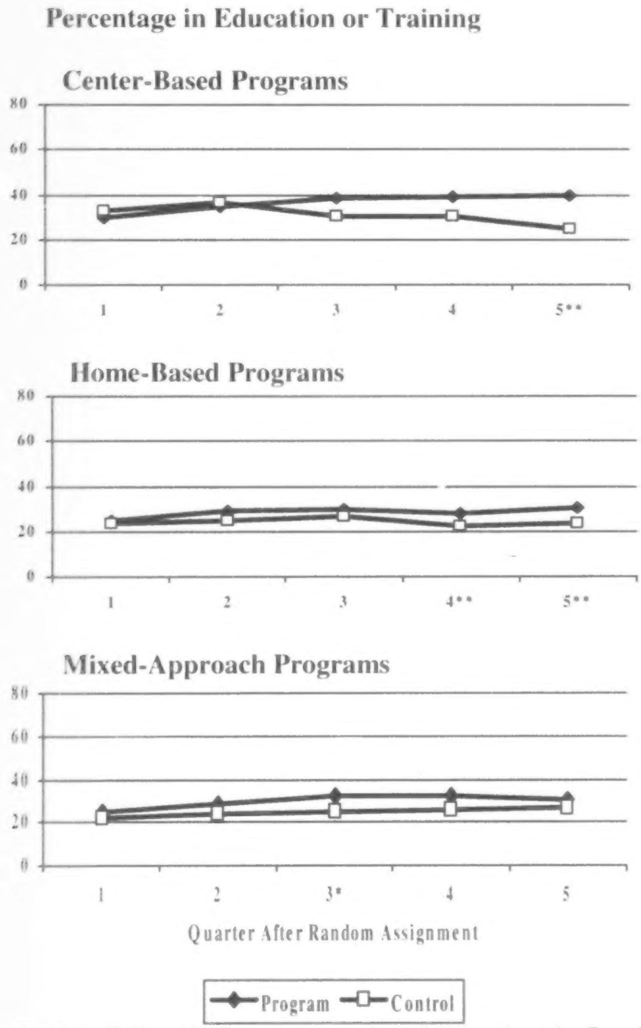
* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

In contrast, Early Head Start parents in center-based and home-based programs participated in education and training activities at higher rates than did parents in the control group for these programs (Figure VI.6). As with employment rates, parents who enrolled in center-based programs started out with higher participation rates in education and training activities in the first quarter (about 30 percent) compared with parents in home-based and mixed-approach programs (between 20 percent and 25 percent). However, over time, parents in the center-based and home-based programs increased their rates of participation in education and training activities, while the rates of parents in the control group remained steady or declined. The participation rate in education and training activities was significantly higher for Early Head Start parents in center-based programs in the fifth quarter, and for Early Head Start parents in home-based programs in the fourth and fifth quarters.

Perhaps because the impact of Early Head Start on education and training activities among parents in center-based programs did not emerge until the fifth quarter, there was no impact on the proportion of these parents who ever participated in these activities (see Figure VI.7), or on any specific educational activities (not shown). Among parents in home-based programs, however, Early Head Start had a significant impact on the proportion who ever enrolled in education and training programs overall, as well as the proportion enrolled in several specific types of education programs. Moreover, Early Head Start significantly increased the average hours per week that parents spent in education or training activities during the 15-month follow-up period. Parents participating in home-based Early Head Start programs were more likely than parents in the control group to take part in high school classes, ESL classes, and vocational courses. There were no impacts on degrees or credentials received during the first 15 months after enrollment in Early Head Start, but it may have been too early for such impacts to emerge. Early Head Start did not significantly increase overall participation in education and training

FIGURE VI.6

IMPACTS ON QUARTERLY EDUCATION AND TRAINING, BY PROGRAM APPROACH



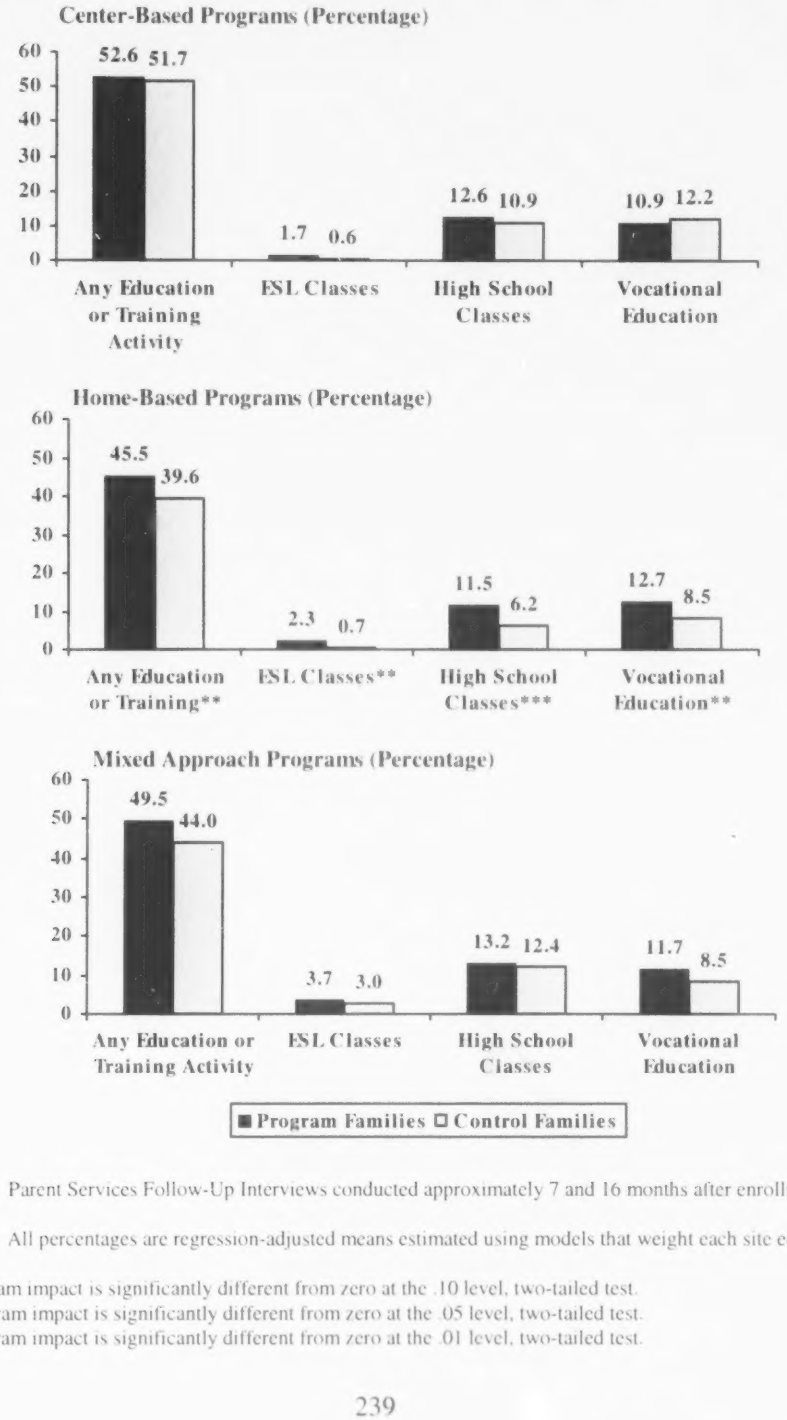
Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE VI.7

IMPACTS PER PARTICIPANT ON EDUCATION AND TRAINING ACTIVITIES BY THE SECOND FOLLOWUP, BY PROGRAM APPROACH



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

programs among parents in mixed-approach programs, but the pattern of impacts was similar to that of home-based programs, and the programs did significantly increase average hours per week that parents spent in education or training activities (not shown).

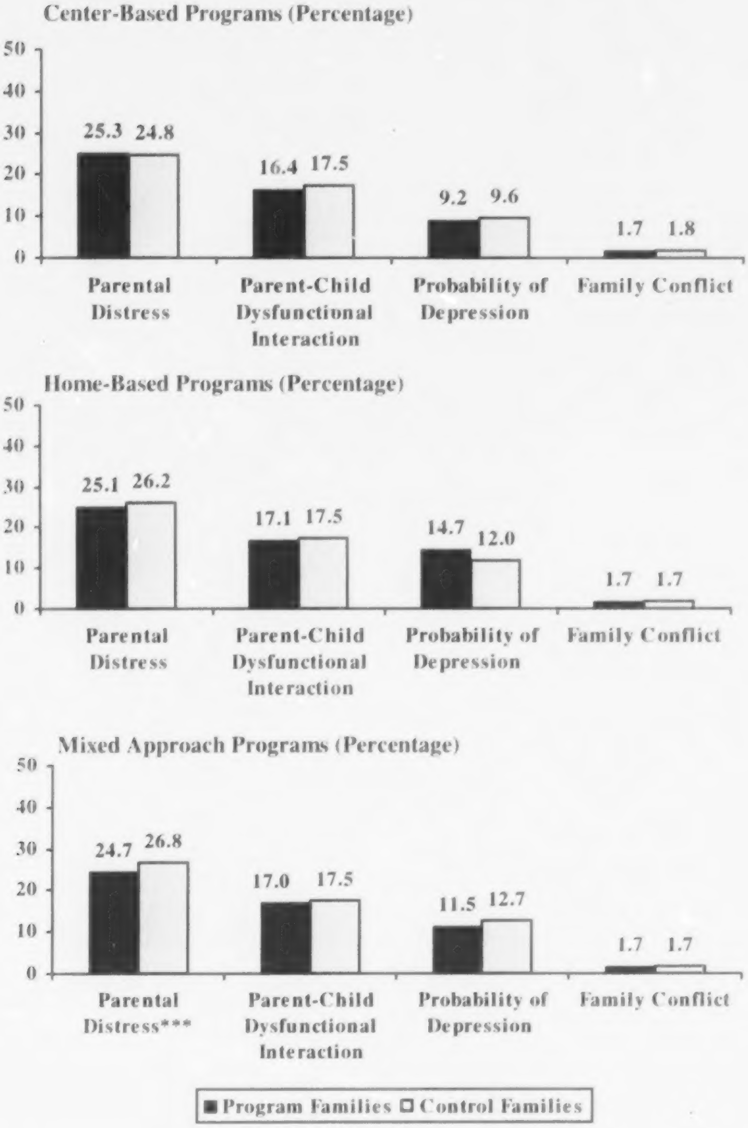
2. Impacts on Parents' Mental Health and Family Functioning

We would expect that, in general, the ongoing support and information provided by Early Head Start staff, as well as crisis intervention when necessary, would help to reduce parenting stress and family conflict. However, the different program approaches vary in their opportunities to interact with parents. Center-based program staff interact with parents on a daily basis, as they drop off and pick up their children, but these interactions may be brief and not provide opportunities for delving into difficult family issues. These staff also interact with parents during group parenting education activities. Home-based program staff, in contrast, may not see parents daily, but time spent with parents during home visits and group parent-child socialization activities offers greater opportunity for intensive discussions of parenting and family development. These in-depth discussions may occur more frequently in home-based than in center-based programs. Parents in mixed-approach programs may have experiences more like those in center-based programs if they use center-based services, and more like those in home-based programs if they receive home-based services. They may experience something in between if they receive both.

Early Head Start had no impacts on parents' mental health or levels of family conflict in either center-based or home-based programs. However, among parents in mixed-approach programs, levels of parental distress were significantly lower than in the control group (Figure VI.8). Levels of mental health and family conflict were similar for program and control families in all three types of programs.

FIGURE VI.8

IMPACTS PER PARTICIPANT ON MENTAL HEALTH AND FAMILY FUNCTIONING AT THE 24-MONTH BIRTHDAY-RELATED INTERVIEW



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

D. VARIATIONS IN IMPACTS ON FAMILY WELL-BEING BY PROGRAM IMPLEMENTATION

As part of the implementation study for Early Head Start, we collected from programs information that we could use to rate their level of implementation (see *Pathways to Quality* and Chapter I of this report for more information), both of the overall program and of the child and family development services separately. Overall implementation and implementation of family development services are most relevant for the family well-being outcomes we are examining in this chapter. Since the pattern of impacts is very similar for groups defined by overall implementation and by implementation of family development services, we present the program impacts for subgroups defined by overall implementation patterns. As described in Chapter II, the three subgroups are programs that were early, later, and incomplete (not fully implemented at either time period) implementers.

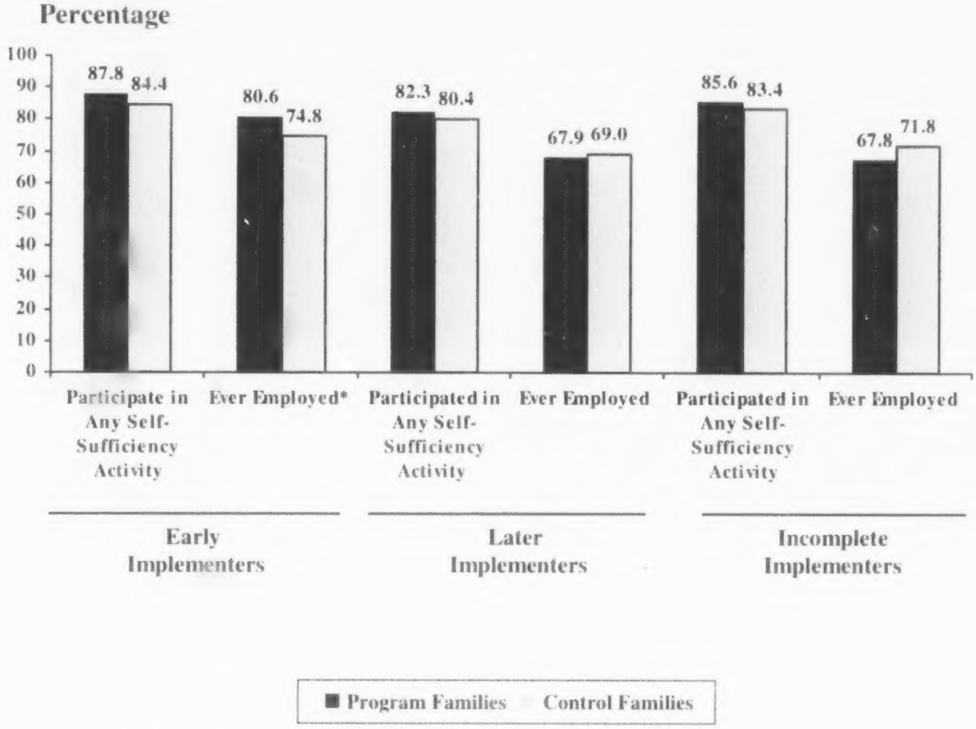
1. Impacts on Family Self-Sufficiency

Early Head Start programs that became fully implemented early had positive impacts on employment and participation in education or training activities during the first 15 months after random assignment (see Figures VI.9 and VI.10). The early implementers had a small positive impact on employment during the follow-up period, and they increased participation in education and training activities significantly in the first and fourth quarters after random assignment (see Figure VI.10). However, because these overall impacts on education activities were small, we found no pattern of impacts of early-implemented programs on participation in specific aspects of educational activities during the first 15 months.

Early Head Start programs that became fully implemented later had no consistent impacts on any measure of family self-sufficiency. The proportion of Early Head Start parents in these programs who were participating in education or training programs increased in the first three

FIGURE VI.9

IMPACTS PER PARTICIPANT ON ANY SELF-SUFFICIENCY ACTIVITY AND EMPLOYMENT BY THE SECOND FOLLOWUP, BY IMPLEMENTATION PATTERN



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

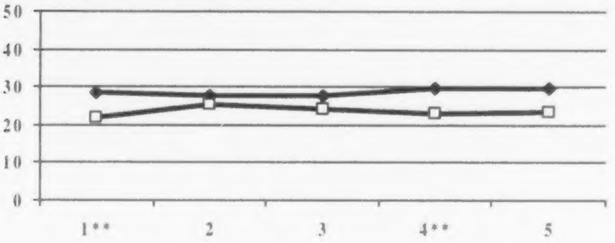
* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

FIGURE VI.10

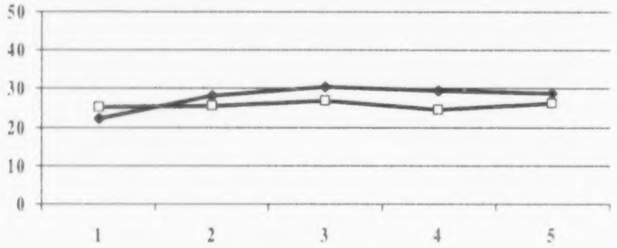
IMPACTS ON QUARTERLY EDUCATION AND TRAINING, BY IMPLEMENTATION PATTERN

Percentage in Education or Training

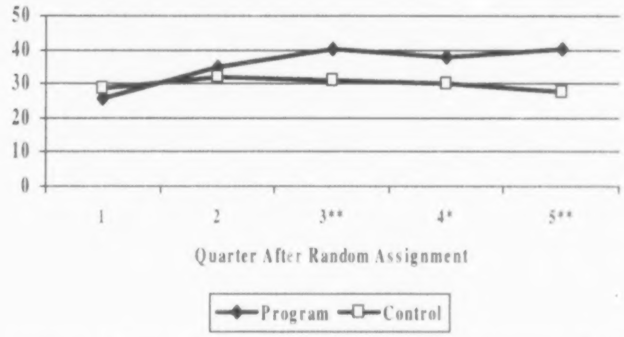
Early Implementers



Later Implementers



Incomplete Implementers



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after random assignment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally. The differences between program and control families are estimated impacts per participant.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

quarters, then leveled off, and was similar to the pattern for control parents. This pattern does not strongly suggest a positive impact of these programs on participation in education programs over time, and there were no positive impacts on related measures of participation in specific education components (not shown).

Early Head Start programs that never became fully implemented had no impacts on employment during the first 15 months after random assignment, but they increased participation in education and training programs in Quarters 3 through 5 (see Figures VI.9 and VI.10). In particular, they increased participation in high school and in vocational programs (not shown). This pattern of findings may reflect the fact that several of the incomplete implementers served a high proportion of teenage parents and may have succeeded in keeping them in school despite implementation challenges.

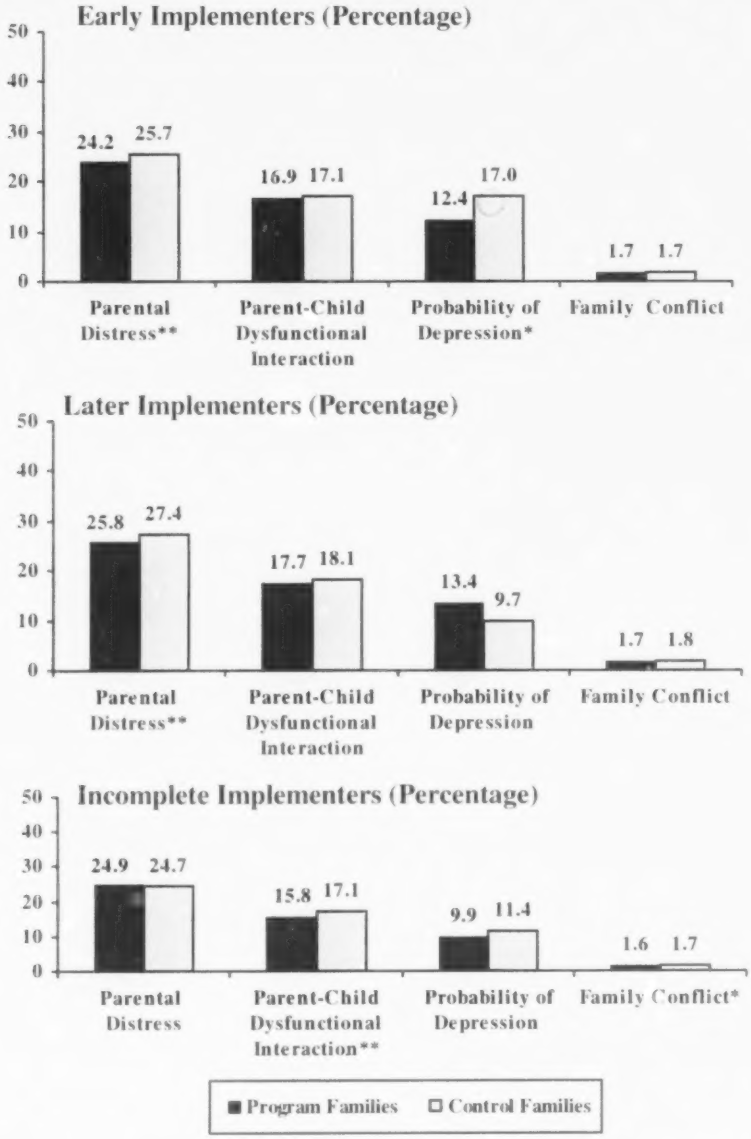
2. Impacts on Parents' Mental Health and Family Functioning

Early full implementation appears to be important for reducing parental distress and depression. Early Head Start programs that became fully implemented early and those that became fully implemented later significantly reduced parental distress when children were approximately 2 years old, while the incomplete implementers did not have a significant impact on parental distress (see Figure VI.11). The early implementers also reduced the probability that parents experienced a major depressive episode in the previous year, while later and incomplete implementers did not.

The incomplete implementers significantly reduced dysfunctional parent-child interactions and family conflict. This pattern of findings may reflect the fact that several of the incomplete implementers initially had a strong focus on family support and were rated as fully implemented in the area of family development services, and another program that was an incomplete implementer had a strong focus on supporting parent-child relationships.

FIGURE VI.11

IMPACTS PER PARTICIPANT ON MENTAL HEALTH AND FAMILY FUNCTIONING AT THE 24-MONTH BIRTHDAY-RELATED INTERVIEW, BY IMPLEMENTATION PATTERN



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

E. VARIATIONS IN IMPACTS ON FAMILY SELF-SUFFICIENCY BY WELFARE-RELATED WORK REQUIREMENTS

As discussed earlier in this chapter, welfare reform policies vary widely across the states, and they were implemented at different times with respect to the follow-up period studied in this report. Early Head Start programs may have responded in different ways to the prevailing welfare reform policies, for example, by providing additional support to parents required to work or by advising parents to pursue educational activities instead of, or in addition to, work. By examining groups of programs defined by aspects of welfare reform policies, we may discern differences in program emphasis or impact in response to those policies.

One of the most important welfare reform policies for the parents in our sample was the variation in the exemption from work based on the age of the youngest child. In about half the states, parents receiving welfare are not required to engage in work activities until their youngest child is 1 year old.[2] In the other states, parents are required to work during the child's first year, usually by the time the child is 3 months old (Kirby, Ross, and Puffer forthcoming). These policies are expected to affect the degree to which parents enrolling in Early Head Start are focusing on work-related activities in their initial months of program participation, and if Early Head Start programs provide substantial support to these parents, they may find it easier to meet the work requirements. To examine the extent to which the Early Head Start interventions are interacting with the welfare policies in their site to modify the welfare, work, and education experiences of parents enrolled in the programs, we defined subgroups of sites on the basis of state (and in some cases, local) welfare policies regarding the young child work exemption, and analyzed impacts that focus on major self-sufficiency outcomes. Forty percent of Early Head Start research programs were in areas where parents of children under 12 months were required to work.

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[2] Many states that provide an exemption from work requirements for parents of infants nevertheless require a parent to work if she has conceived the child while receiving welfare. Other states limit the young child work exemption to one year per adult so that, effectively, the parent will not receive a work exemption for any later-born children, whether or not they were conceived while she received welfare.

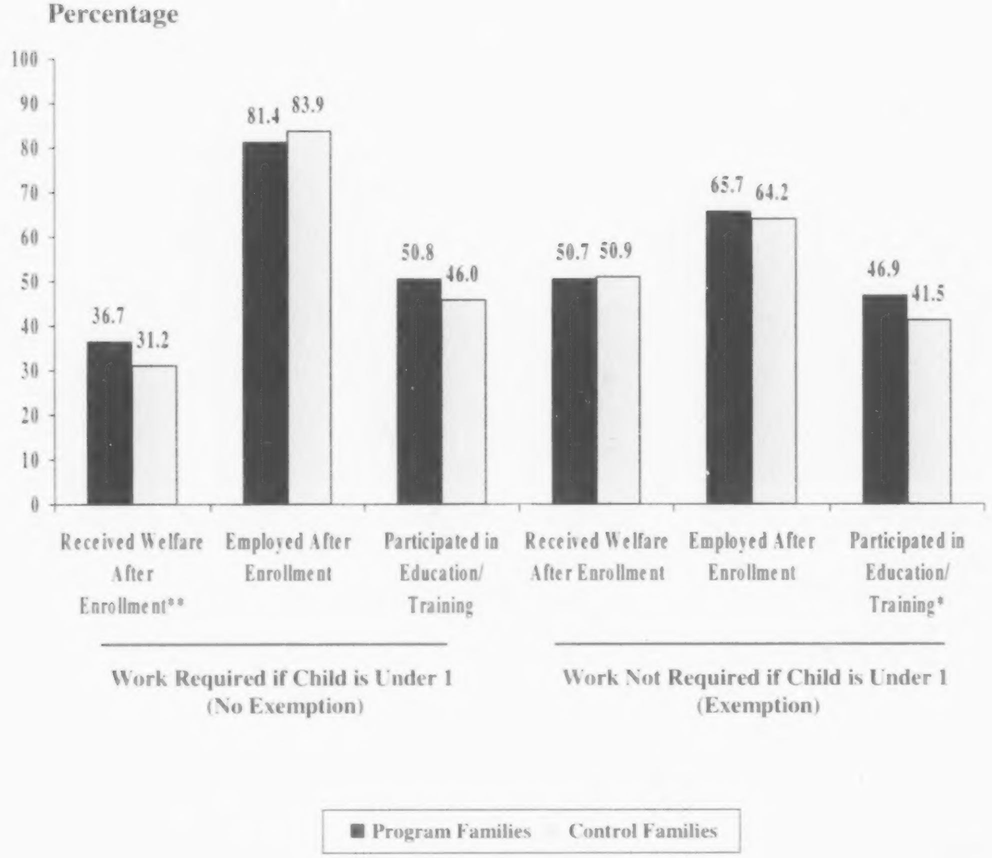
Early Head Start increased receipt of TANF cash assistance in sites in which parents with infants are required to participate in work and related activities, with 37 percent of program parents, compared with 31 percent of control group parents, receiving cash assistance by the second followup (see first set of bars in Figure VI.12). Some observers have been concerned that mothers with young children in states that require work may avoid welfare programs because of the work requirement. Early Head Start programs may work with parents of infants to help them obtain the cash assistance for which they are eligible and to negotiate the work requirements in a way that is beneficial for the development of their own self-sufficiency and for their children. Early Head Start did not have a significant impact on receipt of TANF cash assistance in sites that do not require parents of infants to work.

Although Early Head Start had a positive impact on welfare receipt in sites where welfare-reliant parents of infants are required to work, the programs did not significantly affect participation in self-sufficiency activities overall in these sites (see second and third sets of bars in Figure VI.12). However, Early Head Start significantly increased hours per week that program parents spent in education or training and increased participation in high school classes and ESL classes in these sites. Early Head Start parents participated in high school classes at almost twice the rate of control group parents (9.8 percent compared with 5.3 percent; not shown).

In sites where welfare-reliant parents of infants are not required to work, Early Head Start had no impact on employment but moderately increased levels of participation in education and

FIGURE VI.12

IMPACTS PER PARTICIPANT ON WELFARE, EMPLOYMENT, AND EDUCATION ACTIVITIES BY THE SECOND FOLLOWUP, BY WELFARE-RELATED WORK REQUIREMENTS



Source: Parent Services Follow-Up Interviews conducted approximately 7 and 16 months after enrollment.

Notes: All percentages are regression-adjusted means estimated using models that weight each site equally.

* Program impact is significantly different from zero at the .10 level, two-tailed test.
** Program impact is significantly different from zero at the .05 level, two-tailed test.
***Program impact is significantly different from zero at the .01 level, two-tailed test.

training activities generally (Figure VI.12). In this subgroup of sites, vocational education was higher among Early Head Start parents (11.9 percent) than among control group parents (8.5 percent; not shown).

In both subgroups of sites defined by the welfare-related work exemption related to the age of the youngest child, obtaining a sufficient educational foundation for work seems to have been emphasized. The impact on high school education reflects the fact that teenage parents in the research sample were more likely to be in sites where parents of infants are required to work. The impact on vocational education reflects the fact that older parents were more likely to enroll in Early Head Start sites where parents of infants are exempt from work requirements.

VII. VARIATIONS IN PROGRAM IMPACTS AMONG FAMILIES

Beyond examining impacts overall and in key subgroups of programs, it is important to look at variations in impacts among key subgroups of families. For whom did Early Head Start make a significant difference in outcomes? How did the impacts vary among key subgroups of families? Variations in impacts might provide insights into how the programs influenced children and families and could identify demographic groups that merit special attention in future training and technical assistance.

Our analyses of variations in impacts among family subgroups show that the Early Head Start research programs had significant impacts on some outcomes in every subgroup of families we studied, although the extent and pattern of impacts varied:

- The Early Head Start programs reached all types of families with child development services. They significantly increased service receipt in all subgroups of families we examined.
- Most groups of children benefited in some way by age 2 from participating in Early Head Start. The Early Head Start programs had significant favorable impacts on at least one child outcome in most of the subgroups that we examined.
- The programs had unfavorable impacts on a few child outcomes in key subgroups of families, and these tended to be unfavorable impacts on social-emotional outcomes. The unfavorable impacts on social-emotional outcomes were usually accompanied by unfavorable impacts on negative parenting behaviors.
- While the pattern of program impacts on boys was similar to that of impacts on girls, the impacts were smaller and not statistically significant. The programs had significant positive impacts on parenting among both parents of girls and parents of boys.
- Most parents benefited from participating in Early Head Start in some way related to their roles as parents. Primary caregivers in all subgroups of families that we examined experienced significant improvements in at least one aspect of parenting and family functioning by the time their child was 2 years old. In most subgroups, Early Head Start improved parenting outcomes in more than one domain.

- Some of the less disadvantaged subgroups—families who were not initially receiving welfare, families with more educated parents, two-parent families, and low-risk families—who may have had relatively less need for program services, experienced the fewest impacts, and in some cases experienced unfavorable impacts. Control children and families in these groups tended to experience more favorable outcomes than control children and families in other subgroups.

- Among families with many risk factors, a group that program staff reported was hard to serve, the programs had few significant impacts on children and parents in the short term, and some of the impacts were unfavorable.

- Participating in Early Head Start also helped some parents work toward self-sufficiency. Primary caregivers in many subgroups of families were significantly more likely than their control group counterparts to participate in education or training activities during the first 15 months after they enrolled. However, the programs did not have a significant impact on activities oriented toward helping the primary caregiver become self-sufficient among (1) low-risk families, (2) families who enrolled before their child was born, (3) two-parent families, (4) families in which the primary caregiver lived alone with her children, and (5) families in which the primary caregiver had a high school diploma or GED. For the most part, these were less disadvantaged subgroups in which control families were relatively more likely to participate in self-sufficiency activities.

In the following sections we detail the variations in Early Head Start impacts on service receipt, self-sufficiency outcomes, and child and parenting outcomes for key subgroups of children and families. For a listing of the subgroups analyzed, their sample sizes, and the percentage of the sample in each subgroup, see Table II.10 in Chapter II. Because this chapter reports the results of a very large number of analyses, the detailed tables are included in Appendix E.VII.

Caution must be used in interpreting the variations in impacts among subgroups of families. The subgroups are defined on the basis of a single family characteristic, yet they may also differ in other characteristics. These other unaccounted-for variations in family characteristics may also influence the variations in impacts. Thus, in our analyses, we focus on patterns of impacts across outcomes and consider the potential role of other differences in characteristics that may have influenced the outcomes being examined.[1] We attempted to gain insights into the effects of potential confounding by examining variations in impacts among clusters of families formed on the basis of several characteristics and by examining variations in impacts among families grouped by their number of risk factors. In the discussion that follows, we highlight potentially confounding factors that may help explain the patterns of impacts. Because of the large number of subgroups and outcomes, we focus primarily on patterns of impacts within the subgroups. The chapter concludes with a discussion of the implications of the variations in impacts across family subgroups.

A. VARIATIONS IN IMPACTS BY RACE/ETHNICITY

The impacts of Early Head Start may differ among racial/ethnic subgroups because of cultural differences affecting families' receptiveness to services and, in the case of Hispanic families, language barriers that may interfere with services, especially services and resources to which Early Head Start refers them in the community. The impacts may also differ if some cultural practices or attitudes related to parenting or child development are harder to change than others. Early Head Start programs are expected to provide services that meet families' needs and are given wide latitude for designing services that are culturally appropriate. If they do those things well, we would not expect to see large differences in impacts among racial/ethnic subgroups unless they also differed in other family characteristics or there were important differences between the programs in which they enrolled.

Cultural biases in the child and parenting outcome measures could also contribute to variations in impacts by race/ethnicity. We attempted to minimize these biases by choosing measures that had previously been shown to work well in varied racial and ethnic groups. In addition, as we examined the psychometric properties of the child and family measures, we calculated internal consistency alphas separately for each of the three major racial/ethnic subgroups. For the most part, the measures appeared to be appropriate for all groups of children and families.[2]

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[1] Appendix Tables E.VII.31 and E.VII.32 show the configuration of family characteristics across the research sites.

1. Hispanic Families

The pattern of impacts among Hispanic families suggests that intensity may be a very important element of effective services. Although the Early Head Start programs greatly increased receipt of any services by Hispanic families, the impacts on receipt of intensive home-based services were much more modest and often smaller among Hispanic families than among other families. Moreover, the Hispanic families in the research sample were more likely to include older mothers and later-born children, groups for whom some opportunities for intervening early had already passed.

We found much larger impacts on receipt of any services, receipt of home visits and case management, and participation in group parent-child activities among Hispanic families, which reflects the much lower levels of service receipt among Hispanic control families relative to white and African American control families (Appendix Table E.VII.1). However, Hispanic families tended to experience much smaller impacts than white families on receipt of intensive services. The impacts on use of child care were somewhat larger among Hispanic families, again because of the lower levels of use of center-based child care among Hispanic control families, and, in the case of hours of center-based child care, higher hours per week in center-based care among Hispanic families in the program group.

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[2] Because of sample-size constraints, these analyses are limited to three subgroups; Hispanic, African American, and White families.

The Early Head Start programs had significant impacts on participation in education or job training activities among Hispanic families, but did not have any consistent significant impacts on their employment or welfare receipt (Appendix Table E.VII.2). The large impacts on participation in education or job training among Hispanic primary caregivers reflect the much lower levels of participation in these activities by Hispanic control families compared with control families in the other groups.

The Early Head Start programs had very few impacts on child outcomes when Hispanic children were 2 years old. Only one impact on the development of Hispanic children was statistically significant—Early Head Start reduced the proportion of children who scored below 100 on the Bayley Mental Development Index (MDI) (Appendix Table E.VII.3).

The Early Head Start programs increased stimulation of language and learning and improved knowledge of child development among Hispanic parents. Among these families, Early Head Start significantly increased scores on the Home Observation for Measurement of the Environment (HOME) cognitive, language, and literacy support subscale and increased reading to children at bedtime. Early Head Start also increased the primary caregiver's knowledge of child development.

The general lack of impacts on child development and parenting among Hispanic families, despite the relatively large impacts on service use, may reflect several factors:

- Hispanic families were more likely to be in Early Head Start programs that were later implementers. The early services they received may not have been sufficiently intense or focused on child development to have had extensive impacts on parenting or child development.
- Hispanic families were much more likely not to speak English as their primary language and were much less likely to have completed 12th grade or a General Educational Development (GED) credential.

- Hispanic children in the program group were more likely to have language learning environments that included speakers of two languages (for example, one of the center-based programs that served predominantly Hispanic children operated bilingual classrooms), and children may have been learning both languages more slowly than they would have learned either language in a monolingual environment.

- Hispanic families tended to include older mothers and later-born children. The Early Head Start intervention may not have been early enough in the lives of these families to have had more extensive impacts on parenting and child outcomes.

- Limitations of the data collection in the Spanish language may have affected the impact estimates.

2. African American Families

Early Head Start appears to have been most effective for African American families. Among these families, Early Head Start had a larger number of significant impacts in all key areas—parenting, child cognitive development, and child social-emotional development.

As in the other groups of families, Early Head Start substantially increased service use among African American families (Appendix Table E.VII.1). Early Head Start also increased average hours per week that African American primary caregivers spent in school or job training and reduced their average hours per week in employment during the first 15 months after enrollment (Appendix Table E.VII.2). Early Head Start also reduced welfare receipt during this period among African American families.

Among these families, Early Head Start significantly improved child well-being in all three domains. Early Head Start improved child cognitive development among African American children, increasing children's average Bayley MDI scores and reducing the proportion of children with low scores who might need special services later on (Appendix Table E.VII.3). Early Head Start improved language development, increasing vocabulary production and sentence complexity at age 2. Early Head Start also reduced child aggressive behavior problems and improved child engagement during the parent-child structured play assessment.

The Early Head Start programs improved parenting outcomes among African American families in several areas, including emotional support from parents, stimulation of language and learning, and parent mental health. Among these families, Early Head Start increased parent supportiveness, increased reading to the child, reduced parental distress and parent-child dysfunctional interactions, and reduced depression.

The stronger impacts on child development and parenting among African American families may reflect the following:

- African American families were more likely to be in mixed-approach programs, which may have been better able to match services to families' needs.
- African American families were more likely to include teenage mothers and firstborn children. The earlier intervention with these families may have made the Early Head Start services more effective.
- African American families were more likely to be in school or training when they enrolled. They may have been in a "learning mode" and more receptive to Early Head Start home visit curricula and to Early Head Start efforts to teach them about parenting in center-based settings.

3. White, Non-Hispanic Families

The significant impacts of Early Head Start on white families were exclusively in the area of children's social-emotional development and parenting outcomes likely to influence social-emotional development. Children and parents in white control families tended to receive more favorable scores on the assessments of child development and parenting than African American and Hispanic control families and children, and it may have been more challenging for programs to improve outcomes among white families.

As in the other groups, Early Head Start increased service receipt by white families substantially (Appendix Table E.VII.1). The Early Head Start programs did not significantly influence self-sufficiency outcomes among white families (Appendix Table E.VII.2).

Early Head Start had mixed impacts on children's social-emotional development, but did not significantly affect other areas of children's development. Among white families, Early Head Start reduced child negativity toward the parent and increased child engagement in the parent-child structured play assessment, but it also reduced emotional regulation as assessed with the Bayley Behavior Rating Scale (BRS) (Appendix Table E.VII.3).

Consistent with the favorable impacts on children's social-emotional development, Early Head Start significantly reduced negative parenting behaviors, including parent intrusiveness and spanking (Appendix Table E.VII.3). Early Head Start also increased the extent to which white parents indicated that they would use only mild discipline strategies in response to conflict with their child and reduced the severity of discipline that they would use, on average. Early Head Start reduced family conflict in white families. Finally, Early Head Start also increased the extent to which white parents reported reading to their child daily.

This pattern of impacts may reflect the following:

- White families were more likely to be in home-based programs and less likely to be in center-based programs.
- White families were more likely to be in programs that were implemented early.
- White families were less likely to be in states with early work requirements.
- White families were more likely to be low-risk families (have no risk factors or only one risk factor among the five we considered: (1) being a teenage mother, (2) being a single parent, (3) receiving welfare, (4) having low educational attainment (less that 12th grade or GED), and (5) being neither employed nor in school).

B. CHILD'S AGE AT ENROLLMENT

The age of children at enrollment and the duration of Early Head Start services they could have received by age 2 are closely linked. Some children were not yet born when their families enrolled in Early Head Start, and those who were born ranged in age from 0 to 12 months. Thus, by age 2, children could have received between 12 and 24 or more months of Early Head Start services. Because younger children could have received more services and because earlier intervention with parents may be more effective, we expected children who were enrolled at earlier ages to experience larger program impacts.

1. Children Who Were Not Yet Born at Enrollment

The positive program impacts on service use were consistently largest among families who enrolled before their child was born (Appendix Table E.VII.4). However, Early Head Start did not significantly influence self-sufficiency activities or welfare receipt during the first 15 months among families who enrolled while pregnant (Appendix Table E.VII.5).

Earlier intervention and a longer period of exposure to services may be needed to influence child language outcomes at age 2. Consistent with this hypothesis, Early Head Start had significant impacts on all key language development outcomes among children in families who enrolled before their child was born, but did not significantly improve language outcomes among children in families who enrolled after their child was born (Appendix Table E.VII.6). In the case of sentence complexity, the impacts were large. Impacts on child development outcomes in the other domains were generally not significant in any of the subgroups by child's age at enrollment.

In families who enrolled before their child was born, Early Head Start also had some significant impacts in most areas of parenting. Among these families, Early Head Start (1) increased parent supportiveness, (2) increased some aspects of stimulation of language and learning (improved the support for cognitive, language, and literacy at home and increased the proportion of families who established a bedtime routine for the child), (3) reduced parent detachment, and (4) increased the extent that parents reported that they would use only mild discipline strategies (and reduced the average severity of discipline strategies they would use) in situations of conflict with their child (Appendix Table E.VII.6).

This pattern of impacts may reflect the following:

- These families had the greatest exposure to program services before the children were assessed at age 2.
- Families who enrolled while expecting a child were more likely to be in home-based and mixed-approach programs
- Families who enrolled while expecting a child were more likely to be in programs that were implemented early.
- Families who enrolled while expecting a child were more likely to be receiving welfare when they enrolled.
- Families who enrolled while expecting a child were more likely to be high-risk families.

2. Children Who Were Born at Enrollment

In contrast to the impacts on families who enrolled before their child was born, Early Head Start had fewer significant impacts on child outcomes among the families who enrolled with infants. Early Head Start significantly improved several parenting outcomes among these families, however.

a. Families with Infants Who Were 0 to 4 Months Old at Enrollment

Early Head Start substantially increased service receipt among families with infants at the time of enrollment, as they were for other subgroups. Program impacts on the use of center-based child care were somewhat larger among families who enrolled after their child was born (Appendix Table E.VII.4). Early Head Start also increased participation in education and training programs, increased average hours per week in education or job training activities, and increased the extent of welfare receipt among families with younger infants.

Early Head Start had few significant impacts on child outcomes among families with young infants at enrollment. However, Early Head Start significantly decreased the proportion of families with young infants whose child scored below 85 on the Bayley MDI, which indicates that the children may be at lower risk for developmental delay and less likely to need special services later on (Appendix Table E.VII.6).

Early Head Start also significantly improved at least one outcome in most domains of parenting among families with young infants. The Early Head Start programs increased parents' emotional responsivity as assessed using the HOME; increased support for cognitive development, language and literacy at home (HOME); and increased the verbal/social skills of primary caregivers (HOME); but they decreased nonpunitive interactions with children (HOME) (Appendix Table E.VII.6). Early Head Start also increased knowledge of child development among parents with young infants at enrollment and reduced their parenting distress.

b. Families with Infants Who Were 5 to 12 Months Old at Enrollment

Impacts on service use were also large and positive among families with older infants at enrollment, but tended to be smaller than the impacts for families with younger infants and unborn children (Appendix Table E.VII.4). Early Head Start increased high school attendance and receipt of high school diplomas among these parents (Appendix Table E.VII.5). Among families with older infants, the programs also increased receipt of Temporary Assistance for Needy Families (TANF) cash assistance in the first two quarters after random assignment.

Early Head Start did not have a consistent pattern of impacts on child outcomes among families with older infants at enrollment. However, among such families who received services for a shorter time, Early Head Start significantly increased children's vocabulary production and reduced child aggression.

Early Head Start also had significant impacts on parenting outcomes in several domains. The programs improved stimulation of language and learning among families with older infants, and the pattern of impacts in this domain is strongest for these families (Early Head Start improved support for cognitive development, language, and literacy in the home; increased reading frequency, reading at bedtime, and reading daily; and increased parent-child activities to stimulate cognitive and language development). Early Head Start also reduced conflict in families with older infants at enrollment.

This pattern of impacts may reflect the following:

- These families had less exposure to program services before their children were assessed at age 2.
- Families with older infants at enrollment were more likely to be in center-based programs.
- Families with older infants at enrollment were more likely to be low- or moderate-risk families.

C. AGE OF MOTHER AT CHILD'S BIRTH

Early Head Start may have had differential effects based on the mother's age when the focus child was born. Not only are teenage mothers likely to be less emotionally mature than older mothers, they also may be struggling with their own developmental needs and less receptive to some services directed toward their child's development. Program staff also regarded teenage mothers as harder to serve. If the Early Head Start programs had significant positive impacts on teenage parents and their children, they may provide a useful model to others trying to serve this at-risk group in other places.

1. Teenage Mothers

The Early Head Start impacts on families headed by teenage mothers were concentrated in the social-emotional domain and in parenting factors likely to affect children's social-emotional development. The greater immaturity of teenage mothers, on average, may provide more opportunities for Early Head Start programs to make differences in their parenting behavior and interactions with their children—differences large enough to improve their children's social-emotional development.

As in other subgroups, Early Head Start substantially increased service use by teenage parents. However, the impacts on service use by teenage parents were smaller than those for older mothers on nearly all measures (Appendix Table E.VII.7). Early Head Start increased participation in education or job training (high school attendance, specifically) and average hours per week in education (Appendix Table E.VII.8). Early Head Start also reduced employment and increased receipt of TANF cash assistance during the first part of the follow-up period. Local ethnographic research reported in Box VII.1 provides insights into factors that influence how teenage mothers engage in various program services.

Among teenage mothers, Early Head Start significantly improved child outcomes in two of the three domains (Appendix Table E.VII.9). The programs had significant impacts on language development (increased vocabulary production at age 2) and social-emotional development (reduced child aggressive behavior problem and increased child engagement in the parent-child structured play assessment).

Early Head Start also had some significant impacts in all the areas of parenting that we examined. Among teenage parents, Early Head Start increased parent supportiveness, increased reading at bedtime, reduced parent detachment, increased knowledge of child development, and reduced parenting distress and parent-child dysfunctional interactions. One significant impact was unfavorable: Early Head Start decreased the primary caregiver's verbal and social skills as assessed using the HOME (it is possible that teenage mothers in the program group were more self-conscious or felt like they were being tested on what they learned in the program and talked less during the assessments).

BOX VII.1

FAMILY GOALS AND ENGAGEMENT WITH THE PROGRAM: PERSPECTIVES OF TWO TEENAGE MOTHERS

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For three years, researchers from the Harvard Graduate School of Education have been following two teenage mothers, Rachel and Kristen,[3] as part of an ethnographic study of Early Head Start research families in Brattleboro, Vermont. The purpose of the study is to examine how factors such as parent-child dynamics, child care, work, welfare and other assistance interact over time in families' lives and how they influence engagement with the program. Understanding what young parents want for themselves and their children, and why, is crucial for understanding program efficacy, because participants' goals and beliefs determine what services they find useful. Rachel and Kristen differ strikingly in their present lives and in their plans for the future. These differences explain, in part, how they value and engage differently in the home-visiting, child care, and adult services the program provides.

Two months after her 16th birthday, Rachel gave birth to her daughter Daisy. She and Daisy currently live in an apartment paid for in part by the local Land Trust. Since her daughter's birth, public assistance has been Rachel's main source of income. She works 20 hours a week as part of Vermont's welfare-to-work program. She also takes a full course load at a local community college. While Rachel is at school and work, her daughter Daisy attends full-time child care that is fully subsidized by Early Head Start. Rachel hopes to earn a college degree and secure a good job. She sees attending school full-time, working part-time, placing Daisy in full-time child care, and temporarily remaining on welfare as necessary steps toward self-sufficiency. When asked what she values most about her involvement in Early Head Start, Rachel explains how crucial good-quality, subsidized child care is to her plan. Thus, Rachel uses the Early Head Start services primarily to invest in her skills and training to achieve professional and financial goals. She describes the program as helping her chart a realistic path toward those goals and supporting her emotionally.

Kristen had her baby Emily at age 17. Kristen, her husband Jack, and Emily live in a trailer home in Brattleboro. Jack works full-time as a mechanic, and Kristen stays home part-time to care for Emily, who is in child care two days a week provided by Early Head Start. Kristin wants to have time to care for her daughter, both now and in the future. Unlike Rachel, Kristen is not investing time and resources in her own skills now to work toward a future goal; rather, her priorities are how best to meet Emily's immediate needs. When asked what she gains from participating in Early Head Start, Kristen mentions information about child development and healthy ways to care for children. She values the child care because she believes it benefits Emily's development immediately and directly. For Kristen, Early Head Start is valuable because it helps her care for Emily and supports her daughter's development during these first three years.

Low-income parents choose both whether to apply for Early Head Start and when and how to use Early Head Start services. These choices are rooted in how they understand their present and future lives and in turn influence the impact that the program can have. Mothers like Kristen and Rachel can help researchers and policymakers understand the perspectives of young mothers in similar situations.

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[3] The names of the participants have been changed.

The pattern of impacts on teenage mothers and their children may reflect the following:

- Teenage mothers were more likely to be African American and less likely to be Hispanic.
- Teenage mothers were much more likely to enroll with a firstborn child—Early Head Start intervened earlier in the lives of these mothers.
- Teenage mothers were much less likely to have completed 12th grade and much more likely to be in school or training when they enrolled.
- Teenage mothers were more likely to be in high-risk families (have four or five risk factors among the five we considered: (1) being a teenage mother, (2) being a single parent, (3) receiving welfare, (4) having low educational attainment (less than 12th grade or GED), and (5) being neither employed nor in school).

2. Older Mothers

As in other subgroups, program impacts on service use by older mothers were positive and large, and tended to be larger than for teenage mothers (Appendix Table E.VII.7). Early Head Start also increased older mothers' participation in school or job training (vocational training, specifically) and their average hours/week in education or job training during the first 15 months after enrollment.

Early Head Start had a clear pattern of significant impacts on the development of children of older mothers. Among these children, Early Head Start significantly increased average Bayley MDI scores and reduced the proportion of children with scores below 100. The programs also significantly improved several language outcomes among children of older mothers and increased children's sustained attention with objects during the parent-child structured play assessment. The greater maturity of older mothers may make them more receptive to services that teach them about their children's development and more likely to respond in ways that promote their children's cognitive and language development.

The Early Head Start impacts on parenting among older mothers were concentrated in the areas of emotional support and stimulation of language and learning. Early Head Start improved parents' emotional responsivity as assessed using the HOME and increased parent supportiveness as assessed in the parent-child structured play assessment. Early Head Start also increased support for cognitive development, language, and literacy at home (HOME); increased reading at bedtime and establishing bedtime routines; and improved parents' verbal/social skills (HOME). In addition, Early Head Start significantly increased older mothers' knowledge of child development.

This pattern of impacts may reflect the following:

- At enrollment, older mothers were more likely to have children who were not firstborn children.
- Older mothers were less likely to be in school or training when they enrolled and were more likely to have completed 12th grade or higher.
- Older mothers were more likely than teenage mothers to live with a spouse or to live alone.
- Older mothers were more likely to be low- or moderate-risk families.

D. CHILD'S BIRTH ORDER

Early Head Start may have differential effects depending on the birth order of the child. Intervening earlier in parents' experiences as parents may be more effective than intervening after they have already had several children and established patterns that may be difficult to change.

1. Families Who Enrolled with Their First Child

Early Head Start had a strong pattern of positive impacts on firstborn children and their parents, which suggests that early intervention, when parents first become parents, may be especially effective.

As for other subgroups, Early Head Start had large positive impacts on service use by families who enrolled with their first child. Among families who enrolled with their first child, the program impact on use of center-based child care was somewhat larger, while impacts on other service use outcomes tended to be somewhat smaller (Appendix Table E.VII.10). Early Head Start consistently increased participation in school or job training (specifically high school attendance) and reduced average hours per week in employment (Appendix Table E.VII.11). The programs also increased receipt of TANF cash assistance in the early part of the follow-up period for these families.

Early Head Start enhanced child cognitive outcomes and improved several other outcomes among firstborn children. Early Head Start increased average Bayley MDI scores and reduced the proportion of firstborn children scoring below 85 (which indicates that they may be at less risk for developmental delay and less likely to need special services later on) (Appendix Table E.VII.12). In addition, Early Head Start significantly increased firstborn children's sentence complexity and reduced their aggressive behavior problems at age 2.

Early Head Start significantly improved some outcomes in several areas of parenting that we examined. The programs improved stimulation of language and learning (increased support for language and literacy at home and increased establishment of regular bedtimes and reading at bedtime) among parents of firstborn children. They also reduced spanking and family conflict. Finally, Early Head Start increased knowledge of child development and increased the extent to which parents who enrolled with their first children reported that they would use only mild discipline strategies and reduced the severity of discipline that they reported they would use in situations of conflict with their children.

This pattern of findings may reflect the following:

- Firstborn children were somewhat more likely to be in center-based programs.
- Firstborn children were less likely to be in programs that were implemented early.

- Families enrolling with their first child were much more likely to be teenage mothers.
- Families enrolling with their first child were more likely to be high-risk families.

2. Families Who Enrolled with Later-Born Children

As for other subgroups, Early Head Start significantly increased service use by a large amount among families who enrolled with later-born children. Program impacts on service use tended to be larger among these families, although the impact on use of center-based care was somewhat smaller among these families (Appendix Table E.VII.10). Among families who enrolled with a later-born child, Early Head Start increased employment and overall participation in activities designed to promote self-sufficiency (education/job training or employment) (Appendix Table E.VII.11).

The pattern of program impacts on child outcomes among later-born children differed from that of firstborn children. Early Head Start improved cognitive outcomes among later-born children but did not have significant impacts on any language or social-emotional outcomes among these children. Early Head Start increased average Bayley MDI scores and reduced the proportion of later-born children who scored below 85 (Appendix Table E.VII.12). Importantly, the reduction in the proportion of children with low scores on the Bayley MDI was larger among later-born than firstborn children.

Early Head Start significantly improved parenting in several areas among parents who enrolled with later-born children. Early Head Start increased their emotional responsivity (HOME), increased their reading at bedtime, and improved their verbal/social skills (HOME). Early Head Start also decreased detachment among parents of later-born children, but increased their negative regard. Finally, Early Head Start improved knowledge of child development.

This pattern of impacts on later-born children and their parents may reflect the following:

- Later-born children were more likely to have older mothers.
- Families who enrolled with later-born children were more likely to be Hispanic or white.
- Families who enrolled with later-born children were more likely to be low- or moderate-risk families.

E. CHILD GENDER

We did not expect program impacts to vary according to the child's gender. However, it is possible that differences in the developmental trajectories of girls and boys might lead to different responses to Early Head Start services.

1. Families with Boys

As in other subgroups of families, Early Head Start consistently had large positive impacts on families' service receipt. The program impacts on service use by families with boys were similar in magnitude to those for families with girls (Appendix Table E.VII.13). Early Head Start also increased participation in education and job training activities significantly among primary caregivers with boys (Appendix Table E.VII.14).

The Early Head Start impacts on the cognitive, language, and social-emotional development of boys were favorable, but they were small and did not reach statistical significance. The programs improved parenting outcomes in several areas among parents of boys (Appendix Table E.VII.15). Early Head Start increased reading to boys, increased knowledge of child development among parents of boys, and promoted less spanking. Early Head Start also reduced parent-child dysfunctional interactions in families with boys.

2. Families with Girls

Even though the characteristics of girls' and boys' families were similar, the programs they attended were similar, and the impacts on their service receipt were similar (see Appendix Table E.VII.13), Early Head Start had a clearer pattern of significant positive impacts on the development of girls. Early Head Start increased average Bayley MDI scores among girls and reduced the proportion of girls who received low scores. The programs also improved most of the language outcomes and two key social-emotional outcomes among girls (Appendix Table E.VII.15).

Among families with girls, Early Head Start improved parenting in the areas of emotional support and stimulation of language and learning. Early Head Start increased parent supportiveness and increased support for language and literacy learning in the home (HOME), increased reading to the child, and increased parent-child activities to stimulate cognitive and language development. Early Head Start also increased knowledge of child development among parents of girls.

As was the case among parents of boys, Early Head Start increased parents' participation in education or job training, although the pattern of impacts is weaker (Appendix Table E.VII.14). However, the programs consistently increased the extent to which the primary caregivers who enrolled with girls participated in some kind of activity designed to promote self-sufficiency (education/job training or employment) and the average hours per week they spent in these activities during the first 15 months after enrollment. The pattern of impacts among primary caregivers of boys is similar, but the impacts were smaller and not significant.

The stronger pattern of impacts on girls and their parents does not appear to be due to differences in other measured characteristics of families of boys and girls or differences in the programs in which they enrolled. The distributions of children by gender were very similar in the key subgroups of programs and in the key subgroups of families. Instead, it appears that the boys were less responsive to the improvements in parenting that the programs stimulated in their parents.

F. WELFARE STATUS AT ENROLLMENT

The impacts of Early Head Start on families who were receiving TANF cash assistance when they enrolled may be different from those on families who were not receiving TANF cash assistance. In many cases, families receiving cash assistance faced welfare reform work requirements sooner after they enrolled, while other families may have faced the threat of work requirements if they were to obtain TANF cash assistance but were not immediately subject to them. Families who were not receiving cash assistance may have been working or in school and had other sources of financial support and different needs.

1. Families Receiving TANF Cash Assistance When They Enrolled

The pattern of significant program impacts on families who were receiving TANF cash assistance when they enrolled (welfare families) indicates that the Early Head Start programs may have provided a safety net for children in these families. Early Head Start appears to have helped welfare families maintain a focus on parenting and their child's development while they coped with the new requirements of welfare reform.

As with all subgroups, Early Head Start had large positive impacts on service use among welfare families. However, the Early Head Start impacts on service use tended to be somewhat smaller among welfare families than among those who were not initially receiving cash assistance (nonwelfare families) (Appendix Table E.VII.16). The programs did not significantly increase the extent to which families used child care or center-based child care, although they did significantly increase the average hours per week that children in welfare families were in center-based care.

Early Head Start appears to have delayed employment and welfare exits among some welfare families (Appendix Table E.VII.17). This pattern of impacts is consistent with program staff reports that they advised many families against taking the first job they could find and encouraged them to get the education or training they needed to get a job that would pay higher wages.

Early Head Start impacts on children in welfare families were concentrated in the area of language development. In addition, the programs increased children's sustained attention with objects during the parent-child structured play assessment (Appendix Table E.VII.18). Early Head Start did not have a significant impact on these children's cognitive development.

Early Head Start had several significant impacts on parenting in welfare families. The programs increased parent supportiveness and improved stimulation of language and learning (increased support for language and literacy in the home, increased use of responsive praise, increased reading to children, and increased parent-child activities to stimulate cognitive and language development) (Appendix Table E.VII.18). Early Head Start also improved the safety practices of welfare families.

This pattern of impacts may reflect the following:

- Families who initially received TANF cash assistance were less likely to be in center-based programs and more likely to be in home-based programs.
- Families initially receiving TANF cash assistance were more likely to be in programs that were incomplete implementers overall, but were more likely to be early implementers of family development services (which suggests that programs that served welfare families gave priority to meeting the family development needs of this population).
- Families initially receiving TANF cash assistance were less likely to be in states with early work requirements.

- Families initially receiving TANF cash assistance were more likely to be African American and less likely to be white or Hispanic.
- Families initially receiving TANF cash assistance were much less likely to include a primary caregiver who was employed at the time of enrollment.
- Mothers initially receiving TANF cash assistance were more likely to live alone with their children.
- Families initially receiving TANF cash assistance were much more likely to be high-risk families.

2. Families Not Receiving TANF Cash Assistance When They Enrolled

Early Head Start had somewhat larger positive impacts on service use (especially use of center-based child care) among nonwelfare families (Appendix Table E.VII.16). Consistent with the somewhat larger impacts on use of child care and center-based care, Early Head Start also increased participation in education or job training (high school attendance, specifically) and increased average hours per week in education or training during the first 15 months after enrollment among nonwelfare families (Appendix Table E.VII.17). These impacts are reflected in several significant increases in participation in activities designed to promote self-sufficiency (employment or education/training).

The pattern of Early Head Start impacts on children in nonwelfare families differed from the pattern in welfare families. Early Head Start increased average Bayley MDI scores and reduced the proportion of children in nonwelfare families who received low scores (Appendix Table E.VII.18). Early Head Start had few significant impacts on social-emotional outcomes in this subgroup, but did decrease Bayley emotional regulation scores among children in nonwelfare families. The programs did not have any significant impacts on language outcomes among children in nonwelfare families.

Early Head Start had mixed impacts on parenting outcomes in nonwelfare families. The programs increased reading to children at bedtime and increased knowledge of child development among parents in these families. However, Early Head Start also increased punitive interactions (HOME) and increased negative regard among parents in nonwelfare families.

It appears that although Early Head Start significantly improved the cognitive development of children of mothers in nonwelfare families and improved some aspects of parenting, the programs may also have created greater pressures that increased parents' punitive interactions and negative regard relative to the nonwelfare mothers in the control group. The programs' efforts to help families work toward self-sufficiency may have created pressures that many control families, who did not face immediate work requirements and were less likely to be receiving services that would create similar pressures, did not experience. The unfavorable impacts on parenting may in turn have had a negative effect on their children's social-emotional development.

The pattern of impacts on nonwelfare parents and their children may reflect the following:

- Families initially not receiving TANF cash assistance were more likely to be in center-based programs.
- Families initially not receiving TANF cash assistance were more likely to be in programs that were fully implemented early.
- Families initially not receiving TANF cash assistance were more likely to be in states with early work requirements.
- Families initially not receiving TANF cash assistance were more likely to be white or Hispanic and less likely to be African American.
- Families initially not receiving TANF cash assistance were much more likely to include a primary caregiver who was employed at enrollment.
- Mothers initially not receiving TANF cash assistance were more likely to live with a spouse or with other adults.
- Families initially not receiving TANF cash assistance were much less likely to be high-risk families.

G. PRIMARY OCCUPATION

Early Head Start impacts may vary according to the initial activities of primary caregivers. Employed parents are likely to have different needs and different availability for program services and activities than parents who are in school or training or parents who are neither employed nor in school or training. Employed parents are more likely to need child care and help in balancing the demands of parenting and working. Parents who are in school or training are also likely to need child care, but not necessarily full-time, and may need help balancing the demands of school or training with parenting. Parents who are neither in school or training nor employed may need much more intensive help working toward self-sufficiency goals or, if they are married or living with a partner, may need mostly parenting support. These families may have had more time for program services and activities. Early Head Start programs may have been more effective in meeting some demands and needs than others.

1. Families in Which the Primary Caregiver Was Initially Employed

Early Head Start increased service receipt substantially among families in which the primary caregiver was initially employed (employed families) (Appendix Table E.VII.19). Among those initially employed, Early Head Start also increased employment in the first two quarters after enrollment, which suggests that Early Head Start helped these families retain their jobs longer or find new jobs quickly (Appendix Table E.VII.20). In addition, the programs increased high school attendance later in the follow-up period and increased average hours per week in education or training activities among employed families.

Early Head Start improved outcomes in two areas among children of employed families. The programs significantly increased the average Bayley MDI and improved two social-emotional outcomes (reduced child negativity toward the parent and increased child engagement in the parent-child structured play assessment) (Appendix Table E.VII.21).

Among primary caregivers who were initially working, Early Head Start also significantly improved parenting in several areas. The programs improved stimulation of language and learning (improved support for language and literacy in the home, increased daily reading to children, increased fathers' reading to children, and increased reading frequency) and reduced negative parenting behaviors (reduced parent detachment, parent intrusiveness, and spanking) (Appendix Table E.VII.21).

This pattern of impacts on employed families may reflect the following:

- Families in which the primary caregiver was initially employed were more likely to be in center-based programs.
- Families in which the primary caregiver was initially employed were much less likely to be receiving TANF cash assistance.
- Families in which the primary caregiver was initially employed were more likely to be white or Hispanic.
- Families in which the primary caregiver was initially employed were more likely to be low-risk families.

2. Families in Which the Primary Caregiver Was Initially in School or Training

As with all groups, Early Head Start had large positive impacts on service use among families in which the primary caregiver was initially in school or training. The impact on use of center-based care was largest in this group of families (Appendix Table E.VII.19). In addition, Early Head Start helped these parents stay in school longer, increased their average hours per week in education or training during the follow-up period, and reduced their receipt of public assistance (Appendix Table E.VII.20).

Early Head Start did not significantly affect the cognitive or language development of children of mothers who were initially in school or training, but it significantly reduced aggressive behavior problems among the children (Appendix Table E.VII.21). The reduction in child aggression was relatively large in terms of the effect size.

Among families in which the primary caregiver was in school or training, Early Head Start had significant impacts in two areas of parenting. Early Head Start influenced discipline strategies (increased the extent to which parents reported that they would use only mild discipline strategies and would respond less severely to conflict with their children), and Early Head Start reduced parent-child dysfunctional interactions.

This pattern of impacts may reflect the following:

- Families in which the primary caregiver was initially in school or training were slightly more likely to be in center-based programs.
- Families in which the primary caregiver was initially in school or training were more likely to be in programs that were incomplete implementers.
- Primary caregivers who were initially in school or training were more likely to be teenage mothers.
- Families in which the primary caregiver was initially in school or training were more likely to be moderate- or high-risk families.

3. Families in Which the Primary Caregiver Was Initially Neither Working Nor in School or Training

As with all groups, Early Head Start significantly increased service use by a substantial amount among families in which the primary caregiver was initially neither employed nor in school or job training. The program impacts on use of any services and use of child care tended to be somewhat larger among families in this subgroup, in part because levels of service use were low among control group families in this subgroup (Appendix Table E.VII.19). Early Head Start also had larger impacts on transportation and housing assistance in this subgroup. Early Head Start increased participation in school or job training late in the 15-month follow-up period in this group of families (Appendix Table E.VII.20). The programs also increased receipt of public assistance among families that were not initially employed or in school or training.

Few program impacts on the children of parents who were neither employed nor attending school or training when they enrolled were significant. However, Early Head Start significantly increased sentence complexity at age 2, and fewer children received low scores on the sentence complexity measure (Appendix Table E.VII.21).

Among primary caregivers who were neither employed nor in school or training when they enrolled, Early Head Start improved parenting in a number of areas. The programs increased parent emotional support (increased emotional responsivity and parenting supportiveness), improved stimulation of language and learning (improved support of language and literacy at home, increased reading to children at bedtime, and increased primary caregivers' verbal/social skills), and increased knowledge of child development.

This pattern of impacts may reflect the following:

- Families in which the primary caregiver was initially neither employed nor in school or training were slightly more likely to be in home-based or mixed-approach programs.
- Families in which the primary caregiver was initially neither employed nor in school or training were slightly more likely to be in programs that never fully implemented child development services but fully implemented family development services early.
- Primary caregivers who were initially neither employed nor in school or training were more likely to be white or Hispanic.
- Families in which the primary caregiver was initially neither employed nor in school or training were more likely to be high-risk families.

H. HIGHEST GRADE COMPLETED

The initial educational attainment of primary caregivers may also lead to different needs and varying impacts of Early Head Start. Those who had not completed high school or a GED may have been younger and less mature, may have had learning disabilities, or may have had other problems that interfered with their education and could have interfered with participation in

Early Head Start. Those who had a high school diploma or GED had completed an important step toward self-sufficiency, and they may have been slightly older and better able to participate in and benefit from Early Head Start services. Those with more education may have been more mature and more motivated to improve their lives and those of their children, and they may have been most able to benefit from Early Head Start services.

1. Families in Which the Primary Caregiver Initially Had Not Completed 12th Grade or a GED

As with more educated primary caregivers, Early Head Start had large positive impacts on service use among families in which the primary caregiver had not completed 12th grade (Appendix Table E.VII.22). The program impact on use of center-based child care was especially large in this subgroup. Early Head Start also increased participation in school or training (high school attendance, specifically) in this group of primary caregivers. Among those who initially had not completed 12th grade, Early Head Start also reduced average hours per week in employment (Appendix Table E.VII.23).

Early Head Start did not significantly improve cognitive or language development among children of parents who had not completed 12th grade or the equivalent (Appendix Table E.VII.24). However, Early Head Start significantly reduced aggression among children in these families.

Among primary caregivers who had initially not completed high school or a GED, most Early Head Start impacts on parenting were concentrated in two areas: emotional support (the programs increased emotional responsivity and parent supportiveness) and parent physical and mental health (Early Head Start decreased parental distress, decreased parent-child dysfunctional interactions, and reduced family conflict). Early Head Start also increased reading to children at bedtime and the extent to which parents reported that they would use only mild discipline in conflict situations with their child.

This pattern of impacts among less educated primary caregivers may reflect the following:

- Families in which the primary caregiver had not initially completed high school or a GED were more likely to be in programs that were implemented later.
- Families in which the primary caregiver had not initially completed high school or a GED were less likely to be in states with early work requirements.
- Primary caregivers who had not initially completed high school or a GED were much more likely to be teenage parents.
- Primary caregivers who had initially not completed high school or a GED were less likely to be white and more likely to be Hispanic.
- Families in which the primary caregiver had not initially completed high school or a GED were more likely to be high-risk families.

2. Families in Which the Primary Caregiver Had Initially Completed 12th grade or a GED

As with all groups, Early Head Start substantially increased service use among families in which the primary caregiver had completed high school or obtained a GED (Appendix Table VII.22). Early Head Start did not significantly affect the activities designed to promote self-sufficiency in primary caregivers in this subgroup (Appendix Table E.VII.23).

Among families in which the primary caregiver had completed a high school diploma or obtained a GED, Early Head Start significantly improved several child outcomes. The programs had a clear pattern of favorable impacts on the social-emotional development of children in this group at age 2 (Appendix Table E.VII.24). Early Head Start increased children's sustained attention with objects, reduced child negativity toward parents, and increased child engagement during the parent-child structured play assessment. Early Head Start also significantly increased the children's vocabulary production when they were 2.

Among families in which the primary caregiver had completed high school or a GED, Early Head Start improved parenting mainly in the area of stimulation of language and learning. The programs increased support for language and literacy in the home, increased the extent to which fathers read to their children, and increased reading frequency (Appendix Table E.VII.24). Early Head Start also significantly reduced one of the negative parenting behaviors that were examined (parent intrusiveness).

This pattern of impacts may reflect the following:

- Families in which the primary caregiver had initially completed high school or a GED were slightly more likely to be in programs that were implemented early.
- Families in which the primary caregiver had initially completed high school or a GED were more likely to be moderate-risk families.

3. Families in Which the Primary Caregiver Had Initially Completed More than 12th Grade

As with all groups, Early Head Start substantially increased service use among families in which the primary caregiver had initially completed more than 12th grade (Appendix Table E.VII.22). Program impacts on child care use and out-of-pocket child care costs tended to be largest in this subgroup. Early Head Start also increased participation in vocational training in this group and increased the average number of hours per week that parents spent in education or training activities during the 15-month follow-up period (Appendix Table E.VII.23).

Early Head Start did not significantly affect any of the child outcomes that were measured at age 2 among families with more educated primary caregivers (Appendix Table E.VII.24). In addition, Early Head Start had few significant impacts on parenting among families with more educated primary caregivers. Early Head Start did, however, significantly improve support for language and literacy at home and substantially increased reading to children at bedtime in these families.

This pattern of impacts may reflect the following:

- Families in which the primary caregiver had more education were slightly more likely to be in programs that were fully implemented early.
- Families in which the primary caregiver had more education were more likely to be low-risk families.
- Control families in which the primary caregiver initially had education beyond high school generally had better outcomes than control families in the other groups, and it may have been more difficult for Early Head Start programs to make a difference for this group.

I. LIVING ARRANGEMENTS

The needs of families in different living situations are likely to vary, and Early Head Start effectiveness may also vary. Families in which the primary caregiver lives alone with her children are likely to have greater needs for social and possibly economic support. Families in which the primary caregiver lives with a spouse may need help with relationships and parenting in the context of family relationships. Families in which the primary caregiver lives with other adults are less likely to need social support but may need help with parenting in the context of varying family relationships.

1. Families in Which the Primary Caregiver Initially Lived with a Spouse

As with all groups, Early Head Start substantially increased service use among families in which the primary caregiver lived with a spouse. Early Head Start had small impacts on child care use and use of center-based child care but somewhat larger impacts on home visits, case management, and education and employment-related services in this subgroup (Appendix Table E.VII.25). Among primary caregivers living with a spouse, Early Head Start had few impacts on activities designed to promote self-sufficiency (Appendix Table E.VII.26).

Early Head Start did not affect children's cognitive or social-emotional outcomes in families that included a spouse. However, Early Head Start appears to have had a significant negative impact on two aspects of language development (Early Head Start increased the proportion of children with low vocabulary production scores and reduced combining words). Families that included a spouse were relatively more likely to be Hispanic, and program children in these families may have been in bilingual learning environments and learning both languages more slowly than they would have learned either language in a monolingual environment.

Among primary caregivers who initially lived with a spouse, Early Head Start significantly improved several aspects of parenting. Early Head Start increased emotional support (increased emotional responsivity and parent supportiveness), increased caregivers' verbal and social skills, and reduced spanking.

This pattern of impacts among families that included a spouse may reflect the following:

- Families in which the primary caregiver initially lived with a spouse were slightly more likely to be in home-based programs.
- Primary caregivers who initially lived with a spouse were more likely to be white or Hispanic.
- Families in which the primary caregiver initially lived with a spouse were more likely to be low-risk families.

2. Families in Which the Primary Caregiver Initially Lived With Other Adults

As with all groups, Early Head Start substantially increased service use among families in which the primary caregiver lived with other adults. In most cases, the impacts on service use were somewhat smaller in this subgroup (Appendix Table E.VII.25). However, the impacts on use of child care and use of center-based child care were much larger in this group. Early Head Start had a clear pattern of significant impacts on participation in education or job training among primary caregivers who lived with other adults (Appendix Table E.VII.26). The programs increased participation and average hours per week in these activities throughout most of the 15-month follow-up period. Early Head Start increased high school attendance in this subgroup.

Early Head Start had significant impacts on both child cognitive and child social-emotional outcomes in families in which the primary caregiver lived with other adults. Early Head Start significantly increased average Bayley MDI scores, increased child engagement, and reduced child aggression (Appendix Table E.VII.27).

Early Head Start improved several aspects of parenting in this subgroup. The programs improved emotional support (increased parent supportiveness), improved stimulation of language and learning (increased reading at bedtime, daily reading, and reading frequency, as well as parent-child activities to stimulate cognitive and language learning), and reduced negative parenting behavior (reduced parent intrusiveness).

This pattern of impacts may reflect the following:

- Families in which the primary caregiver initially lived with other adults were slightly more likely to be in center-based and mixed-approach programs.
- Families in which the primary caregiver initially lived with other adults were slightly more likely to be in programs that were implemented early.
- Families in which the primary caregiver initially lived with other adults were more likely to be teenage mothers.
- Families in which the primary caregiver initially lived with other adults were more likely to be moderate- or high-risk families.

3. Primary Caregivers Who Initially Lived Alone with Their Children

As with all groups, Early Head Start significantly increased service use among families in which the primary caregiver initially lived alone with her children (Appendix Table E.VII.25). Early Head Start did not have any significant effects on self-sufficiency-oriented outcomes in this subgroup (Appendix Table E.VII.26).

Early Head Start consistently improved child outcomes among families in which the primary caregiver initially lived alone with her children. The programs significantly increased average Bayley MDI scores and reduced the proportion of children who received low scores (Appendix Table E.VII.27). Early Head Start also had somewhat larger impacts on language outcomes among children of mothers living alone. Finally, Early Head Start improved one aspect of child social-emotional development (child sustained attention with objects).

Among the mothers who initially lived alone, Early Head Start improved parenting in several areas. Early Head Start increased stimulation of language and learning (increased establishment of bedtime routines and reading at bedtime; improved support for literacy and language learning at home) (Appendix Table E.VII.27). Early Head Start also increased knowledge of child development and increased the extent to which primary caregivers reported that they would use only mild discipline in conflicts with their child.

This pattern of impacts may reflect the following:

- Families in which the primary caregiver initially lived alone with her children were slightly more likely to be in home-based and less likely to be in mixed-approach programs.
- Families in which the primary caregiver initially lived alone with her children were more likely to be in programs that were incomplete implementers.
- Families in which the primary caregiver initially lived alone with her children were more likely to be receiving TANF cash assistance when they enrolled.
- Families in which the primary caregiver initially lived alone with her children were more likely to be African American.
- Families in which the primary caregiver initially lived alone with her children were more likely to be moderate- or high-risk families.

J. NUMBER OF RISK FACTORS

In addition to examining subgroups of families defined by one characteristic at a time, we investigated two types of subgroups based on multiple family characteristics—subgroups of families clustered statistically based on multiple characteristics and subgroups based on the number of family risk factors. Variations in impacts among these subgroups provide some insights into the potential confounding factors identified in the discussion of each set of subgroups above.

To minimize the potential confounding of family characteristics, we explored using cluster analysis to form subgroups based on multiple baseline characteristics simultaneously.[4] Five clusters were identified: (1) nonwelfare mothers living alone, (2) working parents living with a spouse, (3) non-English-speaking families, (4) teenage parents, and (5) welfare families. While these clusters take into account multiple characteristics simultaneously, they are smaller than the other subgroups and less power is available for detecting significant impacts in them. The patterns of impacts among these subgroups tend to mirror patterns in the associated subgroups based on a single characteristic, so are not reported here.

In addition to investigating impacts among clusters of families, we examined impacts among families with difference levels of risk. In order to distinguish low, moderate, and high-risk families, we counted the number of risk factors that families had when they enrolled. Some of the risk factors tended to occur together, and when they did, families were considered higher risk. We counted up to five: (1) being a single parent, (2) receiving TANF cash assistance, (3) being neither employed nor in school or training, (4) being a teenage parent, and (5) lacking a high school diploma or GED. Families who had zero or one risk factor were classified as low-risk families. Families who had two or three risk factors were classified as moderate-risk families. And families who had four or five risk factors were classified as high-risk families.

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[4] This analysis used hierarchical clustering statistical techniques to allocate families with “similar” characteristics to the same clusters. The following family measures were used to form the clusters: (1) whether the mother had a high school credential; (2) whether the mother lived with a husband; (3) whether the mother lived alone; (4) whether the mother was a teenager; (5) whether the mother was employed; (6) whether the mother was in school or a training program; (7) whether the mother was receiving TANF benefits; and (8) whether English was the mother’s primary language.

1. Low-Risk Families

As with all groups, Early Head Start significantly increased service use among low-risk families. The magnitude of the impacts on receipt of home visits and participation in group activities was somewhat larger in this subgroup (Appendix Table E.VII.28). In this subgroup, Early Head Start had no significant impacts on activities designed to promote self-sufficiency in primary caregivers (Appendix Table E.VII.29).

Early Head Start did not significantly affect child cognitive or child language outcomes in this subgroup (Appendix Table E.VII.30). However, Early Head Start appears to have had a significant unfavorable impact on several child social-emotional outcomes (less child engagement during the parent-child structured play assessment and lower Bayley BRS emotional regulation scores). This pattern of impacts reflects in part the fact that control children in this subgroup were doing somewhat better than control children in the other subgroups at age 2 on all of the child outcomes we measured (as we would expect if risks are correlated with outcomes).

Among low-risk families, Early Head Start significantly influenced parenting in several areas. Early Head Start increased stimulation of language and learning (improved support for language and literacy learning at home and increased reading to children at bedtime), reduced the severity of discipline that parents reported they would use in response to conflict with their child, and reduced family conflict. Early Head Start also appears to have had unfavorable impacts on several parenting outcomes, which may have contributed to the unfavorable impacts on children's social-emotional development. Early Head Start decreased nonpunitive interactions (as assessed using the HOME) and increased negative parent regard during semi-structured parent-child interactions.

This pattern of impacts on low-risk families may reflect the following:

- Low-risk families were more likely to live in states with early work requirements.
- Low-risk families were more likely to be white.
- Low-risk families were more likely to enroll with older children.
- By definition, low-risk families were more likely to have primary caregivers who were employed, more likely to have primary caregivers who had completed 12th grade or a GED, and more likely to have primary caregivers who lived with a spouse.

2. Moderate-Risk Families

As with all groups, Early Head Start substantially increased service use among moderate-risk families. The impacts on child care use and average hours per week of center-based care were somewhat larger in this subgroup (Appendix Table E.VII.28). Early Head Start increased participation in school or training and increased average hours per week that primary caregivers spent in these activities. Early Head Start increased participation in vocational training in this subgroup (Appendix Table E.VII.29).

Early Head Start had a clear pattern of impacts on children in moderate-risk families. The programs significantly improved child cognitive, language, and social-emotional outcomes among these families. Early Head Start increased average Bayley MDI scores and reduced the proportion of children who scored below 85 at age 2, increased vocabulary production and sentence complexity at age 2, and increased child engagement during the parent-child structured play assessment (Appendix Table E.VII.30).

Early Head Start also improved several aspects of parenting in this subgroup. Early Head Start increased emotional support (emotional responsivity and parent supportiveness) and increased stimulation of language and learning (increased reading frequency, increased support for literacy and language learning at home, and increased parent-child activities to stimulate cognitive and language learning) (Appendix Table E.VII.30). Early Head Start also reduced parent detachment during the parent-child structured play assessment and increased knowledge of child development.

This pattern of impacts among moderate-risk families may reflect the following:

- Moderate-risk families were more likely to be headed by teenage parents.
- Moderate-risk families were more likely to have completed 12th grade and less likely to have attained less education.
- Moderate-risk families were more likely to be Hispanic.

3. High-Risk Families

As with all groups, Early Head Start significantly increased service use among high-risk families. High-risk families in the control group were more likely than control families in the other risk groups to receive services in the community, so the Early Head Start impacts on service use were generally not as large for this subgroup (Appendix Table E.VII.28). Early Head Start increased receipt of TANF cash assistance and food stamps by high-risk families, and reduced their average hours of employment (Appendix Table E.VII.29).

Early Head Start had mixed impacts on child outcomes in high-risk families. The programs significantly improved one child language outcome (reduced the proportion with low vocabulary production scores) but had consistently negative impacts on several child social-emotional outcomes (increased child negativity toward the parent and reduced Bayley emotional regulation and orientation/engagement scores) (Appendix Table E.VII.30). As noted in the joint effort of two local research teams (Box VII.2), adult attachment may be a significant factor in at-risk parents' ability to be effective caregivers.

BOX VII.2

ADULT ATTACHMENT IN EARLY HEAD START PARENTS

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Two of the Early Head Start research sites (in Kent, Washington, and Venice, California) conducted the Adult Attachment Interview (AAI) with all parents at the beginning of the project. The AAI is a structured, hour-long, semi-clinical interview during which the parent is queried about early experiences with caregivers. Transcripts are classified according to a four-category system describing an adult's current "state of mind with respect to attachment." The four states of mind are *secure-freely autonomous, insecure-dismissing, insecure-preoccupied,* and *unresolved* (reflecting mental disorganization associated with traumatic events). Parents whose AAI transcripts are classified as secure-autonomous are more sensitive caregivers of their children. The majority of parents in low-risk samples are classified as secure-autonomous, whereas the majority of parents in low-income samples have insecure classifications, in particular insecure-dismissing and unresolved.

Among parents eligible for the program at the first Early Head Start research site, which involved predominantly white, non-Hispanic mothers, only 27 percent were classified as secure-autonomous, 32 percent were classified as insecure-dismissing, 7 percent as insecure-preoccupied, and 33 percent as unresolved. At the second site, consisting primarily of Latino immigrant families, the distribution was somewhat different: 38 percent of the mothers were classified as secure-autonomous, 25 percent as insecure-dismissing, 31 percent as insecure-preoccupied, and 6 percent as unresolved. The security rate at both sites was typical of other low-income samples, suggesting that Early Head Start parents are at risk for insensitive and unresponsive caregiving. Cultural differences may be involved in the relatively different distributions of preoccupied and unresolved classifications at the two sites.

Early Head Start had few significant impacts on parenting outcomes among high-risk families by the time children were 2. Early Head Start reduced parental distress, but also reduced the likelihood that parents set regular bedtimes for their children.

This pattern of impacts among high-risk families may reflect the following:

- High-risk families were slightly less likely to be in center-based programs.
- High-risk families were less likely to be in programs that were implemented early.
- High-risk families were less likely to be in states with early work requirements.
- By definition, high-risk families were more likely to include a teenage mother, more likely to be receiving TANF cash assistance when they enrolled, less likely to be living with a spouse, and more likely to include a primary caregiver who had not completed 12th grade or a GED.

We found this pattern of mixed impacts despite the following:

- High-risk families were more likely to enroll with firstborn children.
- High-risk families were more likely to enroll when they were pregnant.
- High-risk families were more likely to be African American.

K. CONCLUSIONS AND IMPLICATIONS

The analyses of impacts among family subgroups suggest several implications:

- The Early Head Start programs appear to have been most effective with families who enrolled with firstborn children. Programs had significant impacts in all areas of child development measured among firstborn children and in many areas related to parenting. However, the programs also had impacts on later-born children in the area of cognitive development and improved parenting of later-born children in several areas.
- The Early Head Start programs also appear to have been somewhat more effective in improving child outcomes in families who enrolled before their child was born. In particular, the significant impacts on child language outcomes are concentrated in children whose mothers enrolled while expecting a child. The programs also had a few positive impacts on children who were already born when they enrolled, and improved a number of parenting outcomes in both groups of families.

- The Early Head Start programs had a strong pattern of impacts on girls. Although the pattern of impacts on boys was similar, most of the impacts on boys were not statistically significant. The program impacts on parenting were more similar among parents of boys and girls. It appears that boys' development, which tended to be slightly behind that of girls, was less responsive to the improvements in parenting.

- The programs had more consistent, significant impacts among families in which the primary caregiver had no adult support at home and probably needed the social and other support provided by Early Head Start the most.

- The programs had the most consistent significant impacts on child well-being among families at moderate risk. These families probably needed and benefited from the support Early Head Start programs provided, but did not have so many risks that they had difficulty participating in services and acting on what they were learning.

- The impact analyses results suggest that the Early Head Start programs may need to find new strategies for serving the highest-risk families. The programs had relatively few significant impacts on these families, and a few of the significant impacts were unfavorable. This pattern of impacts is consistent with program staff reports during site visits that the highest-risk families were hardest to serve and suggests that the programs were not able, in the short run, to improve outcomes significantly, compared with the outcomes high-risk control families experienced with the help of other community services that they obtained on their own. Because high-risk families were relatively more likely to be in programs that were not fully implemented early, one important focus in efforts to serve high-risk families effectively may be full implementation of the Head Start Program Performance Standards.

- The Early Head Start programs produced some significant impacts on child well-being in the social-emotional and language domains among children of teenage parents. Moreover, Early Head Start improved parenting outcomes among teenage parents in most of the domains examined. Given the special challenges associated with serving teenage parents and the difficulties other programs have had in improving outcomes for them, this is an important accomplishment. The impacts on the children of teenage parents were not as pervasive as those for children of older mothers. Therefore, continued focus on the special needs of teenage parents and their children might strengthen Early Head Start programs.

- The Early Head Start programs appear to have provided a safety net for child development and parenting among families receiving TANF cash assistance when they enrolled, a population that was most immediately affected by the new requirements of welfare reform. The Early Head Start programs significantly improved the language and social-emotional outcomes of children whose mothers were receiving cash assistance when they enrolled. The Early Head Start programs increased the emotional support that mothers who were initially receiving cash assistance provided their children, in addition to improving the stimulation of language and learning that they provided.

- The Early Head Start programs also appear to have helped employed parents balance the demands of work and family. The programs had a strong pattern of positive impacts on child and parenting outcomes among these families.

In addition to the variations in impacts among different types of programs and contexts, the variations in impacts among subgroups of families suggest that early intervention (intervention early in children's lives and early in families' parenting experiences) may be important for maximizing program benefits. However, the programs also had significant impacts on parents and children who were enrolled during infancy or were later-born, which suggests that the program may be effective in different ways for these different groups. The subgroup analyses also show that program efforts to improve knowledge of child development and increase stimulation of language and learning at home yielded significant improvements in almost all subgroups of families.

For whom did Early Head Start achieve significant impacts? It is notable that the impacts of the Early Head Start research programs were fairly broad-based. The programs had some significant impacts in most of the subgroups we examined. The patterns of significant impacts differed among subgroups, however. The strongest patterns of impacts were found among:

- ***Families with moderate risks.*** Low-risk families tended to do better on their own than other higher-risk families. High-risk families, on the other hand, had more problems and needed more help than the programs provided in the short run.
- ***Families without other adult support at home.*** In the short run, Early Head Start did not increase families' financial resources but did increase their social resources. Families without social support from other adults at home appear to have benefited most from Early Head Start services.

The Early Head Start research programs also demonstrated patterns of significant impacts in several policy relevant subgroups—welfare families, working families, and families headed by teenage mothers. For these families, Early Head Start appears to have provided a safety net for parenting and child development while families coped with new work requirements and time limits on TANF cash assistance, balanced the demands of work and family, or attended to their own developmental needs.

VIII. THE MEANING OF THE EARLY HEAD START PROGRAMS' EARLY IMPACTS FOR CHILDREN AND FAMILIES

A. KEY FINDINGS FROM THE INTERIM ANALYSIS OF EARLY HEAD START IMPACTS

The interim analysis of Early Head Start impacts provides a rich picture of the short-term impacts of the programs on children and families. The analysis shows that:

- A year or more after enrollment in Early Head Start, 2-year-old children performed significantly better than their randomly assigned control group peers on a wide range of cognitive, language, and social-emotional development indicators. Their parents demonstrated more supportive and stimulating parenting behaviors, possessed greater knowledge of infant-toddler developmental milestones, and provided more-supportive home environments. Early Head Start parents were more likely than control parents to participate in education and job training and to have lower levels of parenting stress and family conflict.

- Although these effects are modest in size, the consistent pattern of statistically significant favorable impacts across a wide range of outcomes is promising at this early stage. The findings are "early" because the 17 research programs are among the first ones funded, the follow-up period does not yet include the full period of families' program participation, and the children are only 2 years old. (Data collection is continuing and program impacts will also be assessed when children are 3 years old.)

- Given the voluntary nature of the Early Head Start program, the overall average participation rates were very high during the first 16 months after enrollment. Furthermore, a high percentage of families received intensive services, a reflection of the substantial efforts of program staff to engage families in ongoing services. This accomplishment is particularly notable given the new demands welfare reform made on many program families during the evaluation period.

- Although other services were available in the Early Head Start communities and many control group families received some services, Early Head Start families were significantly more likely to receive a wide variety of services, were much more likely to receive intensive services, and were much more likely to receive intensive services that focused on child development and parenting during the first 16 months of program enrollment.

- Overall impacts varied by the timing of programs' achievement of "full implementation," as measured in the implementation study. Programs that implemented the Head Start Program Performance Standards early on had larger impacts on families' use of services, children's development, parenting, and family development than programs that fully implemented the performance standards later or never implemented them completely.

- With respect to the services families received, subgroup analysis showed that:
  - Impacts on service receipt were broad-based and large in nearly all of the program subgroups we examined, but home-based programs had the greatest impacts on receipt of home visits, case management, and parent-child group activities; center-based programs had the greatest impacts on the receipt of center-based child care and the amount of child care received; mixed-approach programs had impacts that were between those of home-based and center-based programs, but tended to be closest in magnitude to the impacts of home-based programs.

- With respect to impacts on children and families, subgroup analysis showed that:
  - While all center-based, home-based, and mixed-approach programs produced positive impacts on children, they did so differently, with the center-based programs enhancing cognitive development, the home-based improving language development, and the mixed-approach programs enhancing children's language and social-emotional development. With some exceptions, Early Head Start impacts on parenting and the home environment were concentrated in the home-based and mixed-approach programs, as were the impacts on parent participation in education or job-training.
  - Early Head Start programs had some significant impacts on all types of families with diverse circumstances, although patterns of impacts varied. Nevertheless, programs were generally more effective with families in which the primary caregiver has greater need for the social and other program supports, and families with moderate risks rather than low or high risks. Programs also had consistent impacts on child well-being among families headed by a teen parent and families who were receiving welfare cash assistance when they enrolled, two groups for whom concerns about children are paramount.

B. CENTRAL MESSAGES EMERGING FROM THE FINDINGS

From these early findings of the Early Head Start evaluation, several key messages and lessons are already emerging:

- Early Head Start appears to be beginning to make a difference for low-income families, particularly in the lives of 2-year-old children and their parents. The analysis shows that programs can stimulate better outcomes along a broad array of dimensions (with children, parents, and home environments).

- The overall pattern of findings suggests that Early Head Start programs may be tilting the balance of risk and protective factors in the lives of the low-income families they serve, possibly creating or enhancing protective factors for children in their early years. The programs significantly reduced the proportion of children with low scores on the measure of cognitive development, suggesting that fewer children may be at risk for developmental delay or need special services later on.

- All program approaches for delivering services can be successful, but their benefits manifest themselves in different ways when programs choose their service approach based on local family needs.

- Programs that offered both home-based and center-based options in response to local families' needs (the mixed-approach programs) had more flexibility in serving individual families and had a stronger pattern of impacts on children and families.

- Implementing key elements of the performance standards clearly appears to be an important key to success, as evidenced by the larger impacts in programs that implemented the performance standards early. The larger impacts among early implementers than among later implementers suggest that early exposure to programs achieving the standards is especially important for improving child and family outcomes. The smaller impacts among later implementers suggest that families and children do not catch up when the standards are achieved later in their tenure with the program.

C. IMPLICATIONS FOR PROGRAMS, POLICY, AND RESEARCH

When the impact findings are taken together with findings from the comprehensive study of program implementation (see *Pathways to Quality*), several implications emerge.

Programs can now see the value of adhering to the performance standards, attending to operationalizing the standards soon after funding, maintaining staff, and focusing on quality. In addition, however, programs should note that these interim findings suggest:

- If they offer only center-based services, they must find ways to place greater emphasis on supporting parenting, parent-child relationships, and family support.

- If they adopt a center-based approach, programs should increase efforts to support language development and do even more than they are already doing to foster cognitive development, as the impacts so far are relatively small.

- If programs are home-based or mixed, they should strive for greater intensity of services, including more frequent home visits and group socializations, while also attending to children's cognitive development during the home visits and group socializations.

- Programs should be more vigilant about parental safety practices to ensure safe environments for infants and toddlers. Although many families appear to be able to access health services in their communities even without Early Head Start, programs should still work with families to ensure that their specific health needs are being met.
- Although programs appear to be reducing the proportion of infants and toddlers who are "at-risk," all programs should ensure that the children who need disability services receive the appropriate diagnosis and referral for Part C services.
- To achieve more significant impacts on child and family outcomes in the highest-risk families, programs may need to find different or more intensive ways of serving them. To have the greatest impact, it is desirable to enroll families with firstborn children and to enroll families while the woman is still pregnant, but it is possible to have important impacts on children and families who enroll later.

Policymakers in the Head Start Bureau, who have believed in the value of maintaining the Head Start Program Performance Standards, can be more confident in those beliefs. These findings support the value of updating the standards periodically (as happened near the beginning of Early Head Start), monitoring programs regularly, providing the infrastructure of training and technical assistance, and enforcing compliance with the standards.

Researchers can derive many lessons from the study so far. Among the most important are:

- Recognizing the benefits that derive from devoting significant resources to conceptualizing, documenting, and analyzing the implementation process and understanding as fully as possible the approaches (strategies and activities) programs take in delivering services.
- Using multiple methods for measuring outcomes, so that findings are not dependent on parent reports only, child assessments only, or any single methodology.
- Identifying subgroups of programs and policy-relevant populations so that analyses can begin to address questions about what works for whom. Having an adequate number of programs and adequate sample sizes within sites are necessary to make program-control comparisons of outcomes for particular subgroups of sites or subgroups of families. Then, research can provide important insights into program impacts under particular conditions and for particular groups of families.
- Incorporating local perspectives in national evaluation studies so that the voices of programs and local research perspectives can augment the cross-site analyses.

D. NEXT STEPS

While these findings are generally positive, we emphasize that they are interim. More analyses will be completed and reported in the coming year:

- In the final report, due in spring 2002, we will add data from the cognitive and language assessments of 3-year-olds, along with interviews with their parents and analysis of videotaped parent-child interactions at that age. We will incorporate data on education, employment, child care, and other services used through 26 months or more of program participation, as well as summary data obtained when families exit the program (typically sometime between the child's third birthday and entry into a prekindergarten program).
- With longitudinal data across multiple timepoints along the age and program enrollment dimensions, we will report findings from more-complex multivariate analyses, including analyses of mediators of program impacts and growth-curve analysis.
- In the coming year, two special policy reports will provide additional findings related to children's health and disabilities and child care.

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